STATE OF CALIFORNIA—THE RESOURCES AGENCY

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Energy and Ocean Resources Unit

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Commission Vote:	12-0
Proposed Revised Findings:	May 2, 1997
Hearing Date:	May 14, 1997
Item No.:	20a

~~STAFF RECOMMENDATION~~ PROPOSED FINDINGS AND CONDITIONS
PERMIT AMENDMENT AND CONDITION COMPLIANCE

APPLICANT: Southern California Edison Company (Edison) on behalf of Edison, San Diego Gas and Electric Company, and the Cities of Anaheim and Riverside, as Owners of San Onofre Nuclear Generating Station (SONGS) Units 2 and 3

PERMIT NO: 6-81-330-A (formerly 183-73)

PROJECT DESCRIPTION: 1) Permit Amendment: Request to amend 1991 permit conditions that require mitigation for adverse impacts to the marine environment caused by construction and operation of SONGS Units 2 and 3;

2) Condition Compliance: Request for approval of preliminary wetland restoration plans and plan for experimental artificial reef for kelp.

DATE OF COMMISSION ACTION:	April 9, 1997
COMMISSION ACTION:	Approval with Conditions.
COMMISSIONERS ON THE PREVAILING SIDE:	Chairman Areias and Commissioners Allen, Armanasco, Flemming, Hickox, Kehoe, Miller, Pavley, Potter, Reilly, Wan, and Wright.
COMMISSIONERS ELIGIBLE TO VOTE:	Same as above 12-0 vote.
SUBSTANTIVE FILE DOCUMENTS:	See Appendix A

STAFF NOTE

On April 9, 1997, the Commission held the third and final public hearing and approved a package of amendments to the 1991 adopted permit conditions for the San Onofre Nuclear Generating Station 6-81-330-A (formerly 183-73).

The Commission's April 9, 1997 action included changes to the proposed staff recommendation. This package of revised amended conditions and proposed findings includes all revisions made as a part of the Commission's action. **New text is underlined. Deleted text is marked with strikeouts.**

The Commission will hold a public hearing and vote on the revised findings at its May 14, 1997 meeting. The purpose of the hearing is to consider whether the revised amended conditions and proposed findings adequately represent the Commission's action rather than to reconsider the merits of the amendments or the appropriateness of the adopted conditions. Public testimony will be limited accordingly.

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Guide to Reading this ~~Staff~~ Report

This is a complex permit and a complicated amendment package involving a project with a long and involved history. All this makes for a large and detailed ~~staff~~ report. To make reading this report a manageable task we suggest the following steps:

1. Read the **Executive Summary**.
2. Focus on the **Summary Table** in this Executive Summary. This Table provides a summary of:
   - The 1991 Commission conditions—the existing mitigation package.
   - The permittee's proposed amendments.
   - ~~Staff's recommended~~ The Commission's adopted package of conditions.
   - Permittee's progress on condition compliance.
3. Review the Table of Contents which provides a guide to locating the ~~recommended~~ approved conditions, the findings, and the supporting materials, ~~and~~ correspondence, and Appendices.

EXECUTIVE SUMMARY

NOTE: On April 9, 1997, the Commission approved a package of amendments to the 1991 SONGS permit conditions. The amendments were generally the same as those recommended by staff in its March 21, 1997 staff report, with several exceptions. These Proposed Findings and Conditions consist of the March 21, 1997 staff report as revised to reflect the Commission's April 9, 1997 action. **Language added to reflect the Commission changes is underlined. Deleted language is shown with strikeouts.**

Southern California Edison (SCE)(the permittee) as majority owner and operating agent seeks to amend the coastal development permit for the San Onofre Nuclear Generating Station (SONGS) Units 2 and 3. The permittee has submitted an amendment package that contains numerous significant revisions to the conditions that were adopted by the Commission in 1991 to mitigate the adverse impacts of the power plant on the marine environment. The permittee's submittal also includes for Commission review the preliminary plans intended to comply with the conditions as revised by the permittee. In its August, 1996 application, the permittee asked that the Commission consider the entire submittal as one amendment package.

~~The staff recommends that~~ On April 9, 1997, the Commission:

1. Adopted a resolution approving amended conditions as revised by the staff recommendation and by the Commission, and

2. Adopted a resolution: (1) rejecting the preliminary plan for San Dieguito Wetlands; (2) rejecting the preliminary plan for Ormond Beach Wetlands; and (3) approving the preliminary plan for the experimental kelp reef.

Although the ~~staff recommends that the~~ Commission adopted a resolution approving amended conditions, most of the permittee's proposed revisions are not included in the amended conditions. The effect of the Commission's ~~adoption of staff's recommendation~~ action is to deny most of the revisions proposed by the permittee on ~~permittee. The basis for staff's recommendation to deny these components of the permittee's proposed amendments is that the amendments are~~ the ground that they are inconsistent with the Coastal Act. However, since the permittee submitted one amendment package and because the ~~staff is recommending approval of~~ Commission approved some revisions to the conditions, the resolution ~~for~~ the Commission ~~action~~ adopted is structured as an approval of amended conditions.

The ~~revisions recommended by staff~~ amendments approved by the Commission are primarily to Condition C–Kelp Bed Mitigation. The revisions reflect that the size of the mitigation kelp reef required by Condition C can be reduced, although not to the degree proposed by the permittee, consistent with the Coastal Act. The ~~staff concluded~~ Commission found that the permittee's proposed revisions to Condition A–Wetland Mitigation and Condition D–Monitoring and Oversight would result in inadequate mitigation of the impacts of SONGS Units 2 and 3. The only revisions to Condition A that the Commission approved are the establishment of new deadlines for condition compliance, the allowance of up to 35 acres of partial credit for permanent inlet maintenance at San Dieguito, and the addition of a trust fund option to implement the wetland project. The only revision that ~~staff is recommending to Conditions A and~~ the Commission approved for Condition D is the addition of a trust fund option that would enable the permittee to pay a specified amount of money into special accounts to enable all the permit conditions to be implemented by third parties.

~~Staff is also recommending denial of~~ The Commission denied the permittee's preliminary plans for wetlands restoration at San Dieguito and Ormond Beach. The plan for San Dieguito ~~must be~~ was rejected because the owners/managers of most of the property identified in the plan ~~have~~ had withdrawn their authorization to use the land. The Ormond Beach plan lacks sufficient detail to evaluate its consistency with Condition A. Finally, ~~staff has prepared conditions of approval and findings that address~~ the Commission conditionally approved the experimental kelp reef plan.

In summary, the Commission found that most of the permittee's proposed amendment package as submitted does not fully mitigate impacts to the marine environment caused by the construction and operation of SONGS Unit 2 and 3, and is therefore not consistent with the Coastal Act. The ~~recommended revised~~ approved conditions incorporate elements of the permittee's submittal that are consistent with the Coastal Act, and retain most major elements of the 1991 conditions. ~~Staff has also prepared conditions of denial and~~ The Commission adopted findings that ~~address~~ deny the plans submitted in compliance with Condition A–Wetland Mitigation, and findings for approval for the experimental reef plan to implement a portion of Condition C–Kelp Bed Mitigation.

The Summary Table in this Executive Summary provides a compilation and comparison of the 1991 permit conditions, the permittee's requested amendments, key components of the ~~staff recommendations~~ Commission's approval, and the permittee's progress towards full condition compliance.

HISTORY AND BACKGROUND

In 1973, the California Coastal Zone Conservation Commission (CCZCC, now the California Coastal Commission) denied a permit for the construction of SONGS Units 2 and 3. In 1974, the Commission approved a permit for the construction of the SONGS Units 2 and 3 with conditions that:

1) established a three-member independent Marine Review Committee (MRC) comprised of members appointed by the Commission, the permittee, and an environmental coalition that had opposed the project, to carry out a comprehensive field study to predict and measure the impact of the SONGS on the marine environment; and

2) authorized the Commission to require the permittee to make future changes in the SONGS cooling system (as extensive as the installation of cooling towers) to address adverse impacts to the marine environment identified by the MRC.

The 1974 coastal development permit authorized the construction and operation of SONGS Units 2 and 3 prior to a complete analysis of, and mitigation for, marine resource impacts. In 1979, based on recommendations from the MRC, the Commission recognized that compensatory mitigation measures could be appropriate in addition to, or in-lieu of, changes to the SONGS cooling system (e.g., mitigation by avoidance, such as cooling towers).

In 1989 the MRC submitted its final report and recommendations. The recommendations in the MRC Final Report (concurred with by the permittee's MRC representative) documented significant impacts to fish populations in the Southern California Bight, and to the San Onofre kelp bed community. The MRC's Final Report also included

recommendations for mitigating adverse impacts to the marine environment caused by the SONGS.

The 1974 permit is still in full force and effect, and its conditions gave the Commission the authority in 1991 to further condition the coastal development permit to require the existing comprehensive mitigation package based on the findings and recommendations of the MRC.

The Commission's Adopted 1991 Conditions

The Coastal Commission staff presented a recommended mitigation package (based on the MRC's comprehensive study and final report) to the Commission at a public hearing on July 16, 1991. The Commission concluded that a compensatory mitigation program was the most cost-effective means of dealing with the impacts of SONGS Units 2 and 3. The Commission found that because costs would be lower, and unlike the impact avoidance options considered but rejected, compensatory mitigation would not interfere with plant operations or result in reduced plant efficiency. The Commission therefore further conditioned the SONGS permit to require implementation of the following mitigation program elements:

- creation or substantial restoration of at least 150 acres of Southern California wetlands (Condition A);
- installation of fish barrier devices at the power plant (Condition B); and
- construction of a 300-acre kelp reef (Condition C).

The permit conditions adopted by the Commission also require the permittee to fund administrative and scientific oversight and independent monitoring of the mitigation program (Condition D), to be conducted by a small mitigation monitoring program team and necessary scientific contractors under the direction of the Commission's Executive Director. Condition E requires public availability of the MRC data.

In approving the 1991 permit conditions, the Commission found the mitigation, monitoring, and remediation program to be a **minimum** package, and that the only way the permittee should be allowed to mitigate adverse impacts through compensation rather than to make extensive changes to the SONGS cooling system to prevent adverse impacts was through the full adopted mitigation package.

The Commission then directed the staff to consider the need for additional mitigation, identifying specifically that consideration be given to a fish hatchery program. On March 23, 1993, the Commission added a requirement (Condition F) for the permittee to partially fund ($1.2 million) construction of an experimental white seabass hatchery

program. Due to its experimental nature, the Commission did not assign mitigation credit for the hatchery.

In 1992, at the permittee's request and after an extensive selection process established by the 1991 permit conditions, the Commission approved the San Dieguito Lagoon as the site for 150 acres of wetland restoration.

1995 AMENDMENT APPLICATION

Criteria for Filing Amendment Application

The Commission's regulations governing permit amendments require that, in order to be accepted for processing, amendments to coastal development permits must not " lessen or avoid the intended effect of a ... conditioned permit" unless the applicant provides "newly discovered material information" that could not have been produced before the permit was granted (Section 13166(a)(1)).

In 1995, the permittee submitted an amendment request that was rejected by the Executive Director as not meeting this standard. After a public hearing at its November 1995 meeting, the Commission did not overturn the Executive Director's determination. The 1991 adopted conditions remain in full force and effect.

Commission Staff and Permittee Attempt to Develop a Consensus Alternative Mitigation Package

During the November 1995 hearing, the Executive Director stated his high priority objective of getting the mitigation implemented as soon as possible by working with the permittee to develop an alternative amendment package that could be accepted for filing and be brought to the Commission for a public hearing and decision. The Commission also gave the Commission staff and the permittee the charge to get the mitigation plan implemented as soon as possible.

Since November 1995, the staff has worked intensively with the permittee and others to try to develop an acceptable amendment package that is consistent with the Coastal Act. Numerous meetings with the permittee, staff from California Department of Fish and Game (CDFG), United States Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), and other agencies, and outside scientists have been required to discuss the permittee's concerns relating to implementation of the 1991 permit conditions and the appropriateness of any amendments to the mitigation program. The permittee states that the staff has required numerous studies and technical meetings above and beyond what is required by the current permit. However, these studies and meetings were necessary to allow informed decisions regarding appropriate changes based on the permittee's desire

to reduce the mitigation package stipulated in the 1991 permit. Some of the staff's attempts to develop a consensus alternative mitigation package include:

Partial Credit for Enhancement

- The staff has worked with the wetland resource agencies (CDFG, USFWS, ~~NFMS~~NMFS) to try and meet the permittee's desire to satisfy some of the wetland mitigation obligation through partial credit for enhancement of existing functioning wetlands by inlet maintenance. The 1991 permit calls for **creation or substantial restoration** of at least 150 acres of coastal wetland **and** the maintenance of continuous tidal flushing. Thus, allowing partial credit for enhancement activities (e.g., inlet maintenance at San Dieguito Lagoon that in the 1991 permit conditions is a required component) requires a permit amendment. The staff support~~s~~ed Commission approval of an amendment to allow partial credit toward the 150-acre requirement for enhancement activities. The permittee's amendment requests **full** credit for enhancement of existing wetlands by inlet maintenance.

  The ~~staff recommendation, if approved by the~~ Commission~~, results in~~ ~~**denial**~~ **denied** ~~of~~ the permittee's proposed amendments to the wetland conditions and the permittee's proposed wetland plan. The ~~recommendation does include a conceptual approval of~~ Commission approved revisions to Condition A that allow up to 35 acres of partial credit for enhancement at San Dieguito. ~~and~~ This is also reflected in the cost figures used for wetland restoration for the optional trust fund.

Interagency Wetland Advisory Panel's Recommendations

- As a way to reach an agreement on the amount of partial credit for inlet maintenance at San Dieguito Lagoon, the staff and the permittee sought the advice and recommendations of the Interagency Wetland Advisory Panel (IWAP) (Exhibit 3). However, the permittee's mitigation plan for San Dieguito Lagoon has not addressed the IWAP recommendations and requests substantially more credit for inlet maintenance than either the IWAP or staff can support. Commission staff used the majority of the IWAP recommendations in developing the cost estimates used in the staff recommendation for wetland restoration in the optional trust fund.

Independent Review Panel for Kelp Studies

- The permittee collected additional data on the San Onofre kelp bed after the MRC field studies were terminated. The permittee used some of the same contractors that the MRC used. The permittee's contractors used the same methods as the MRC, but did not look at the same factors studied by the MRC. The permittee's contractors confined their work to documenting changes only in kelp abundance. The MRC's work was more comprehensive and included measurements of the

influence of sea urchins, light levels, and turbidity, and looked at the entire kelp bed community.

- Commission staff sought (based on the 1993 Commission resolution regarding MRC dissolution) to have the MRC scientists review the permittee's new kelp data. The permittee objected and in the spirit of moving the mitigation project along staff agreed with the permittee's proposal to establish a three member Independent Review Panel. The permittee and the Commission staff jointly selected the three member scientific panel and jointly framed the questions for the panel to consider.

- The staff agrees with the Independent Panel's **qualitative** conclusion that the adverse impacts to the San Onofre kelp bed from the SONGS operation are less than originally estimated by the MRC. The staff also used the Panel's suggested methods to **quantitatively** determine the level of impact.

Design of Experimental Kelp Reef

- The staff has worked diligently with the permittee to develop a mutually acceptable design for the experimental artificial reef through meetings with the permittee, Department of Fish and Game staff, and potential construction contractors. The permittee's proposed experimental reef plan reflects this work.

Alternative Materials for Kelp Reef Construction

- Although the 1991 permit requires that the kelp mitigation reef be constructed of quarry rocks, the permittee has expressed interest in using concrete because it is cheaper. The staff has agreed to consider the possible use of concrete as a construction material for the kelp mitigation reef. The staff suggested the incorporation of concrete into the design of the experimental kelp reef to determine whether it would be a suitable building material for the larger kelp mitigation reef. Use of concrete to construct the artificial reef requires a permit amendment. The ~~staff recommendation supports the permittee in seeking~~ Commission's approval ~~for an~~ of the amendment ~~to consider~~ package allows the consideration of the use of concrete in construction of the artificial reef, and thereby potentially reduces mitigation costs if the use of concrete proves successful in the experimental phase of the artificial reef.

Monitoring

- The staff has offered numerous revisions to the intensity and breadth of the required monitoring programs to reduce monitoring costs and to maximize the use of funds for construction of the mitigation projects. The staff has also suggested numerous monitoring strategies generally consistent with the extensive performance standards spelled out in and that uphold the intent of the 1991 permit, but do so at a lower overall cost to the permittee. Independent monitoring is critical

in order to ensure that the mitigation works and that, if needed, remedial steps are taken.

Trust Fund

- The Commission and staff are mindful that although 23 years have passed since the 1974 approval of the SONGS, 14 years have passed since SONGS Units 2 and 3 began operating, and 6 years have passed since the Commission imposed mitigation requirements for SONGS, and still little significant mitigation for lost coastal resources has occurred. This delay in the implementation of mitigation led Commission staff to propose and the Commission to strongly endorse and approve a trust fund solution that would cap the permittee's total costs and provide the means to effectively and efficiently build the required reef and wetland mitigation projects as quickly as possible.

- A trust fund approach has numerous advantages and is strongly supported and encouraged by staff. Once the trust funds are fully funded, the permittee would have no continuing responsibility for the wetland restoration components of the mitigation program. Utilization of the trust funds would provide the permittee with certainty with respect to the overall cost of the mitigation program. In particular, certain costs of the program, such as the remediation requirements for the wetland and kelp reef projects, are currently open-ended. The trust funds would establish a cap on the remediation costs for which the permittee would be responsible, as well as limit the permittee's financial responsibility for the overall project to a specified monetary amount.

- In adopting a trust fund approach, the risk to the implementing entities, the Coastal Commission, and the public is that there could be unanticipated costs. A resulting shortfall of funds would preclude full compensation for lost resources. However, there are costs and delays associated with the permittee's continuing disagreement with the Commission and others on condition interpretation and implementation that do not translate into public benefits. On balance, the staff believes and the Commission concurred through its action that the benefits to all parties outweigh the risks of a trust fund approach.

- The ~~staff recommendation~~ Commission's approved findings and conditions and ~~appendices~~ Appendix F include details on costs used to determine the trust fund amounts and the proposed structure for implementation.

COMMISSION REVIEW OF 1996 AMENDMENT APPLICATION

The permittee's pending application for the proposed amendments to CDP 6-81-330 was submitted August 1996, filed on September 17, 1996 and placed on the Commission's

October 8, 1996 agenda. In August of 1996, the staff reviewed the permittee's current amendment request for compliance with the regulations governing permit amendments and determined that, although many components of the proposed amendments do not meet the criteria for acceptance, the overall package does. The amendment application before the Commission now is different in several ways from the rejected 1995 amendment request. The current amendment request includes a review of the permittee's new kelp data by the Independent Technical Review Panel (a three-member panel jointly selected by the permittee and the Commission staff) who concluded that SONGS's effect on kelp abundance is less than originally predicted by the MRC. The CCC staff accepts this conclusion by the independent scientists and believes this new information reviewed by a group of independent scientists warrants Commission approval of this part of the amendment as recommended.

The Commission heard public testimony and continued the item to its November 13, 1996 hearing. At the November 1996 hearing, the San Dieguito River Park Joint Powers Authority (JPA) cited deficiencies in the permittee's proposed plan for San Dieguito Lagoon that, in the JPA's view, invalidated agreements between the permittee and the JPA, thus nullifying the permittee's authorization to use key JPA owned and managed lands. Because the permittee's resultant lack of authority to use these lands rendered many aspects of the proposed amendments and mitigation plans unworkable, the Commission staff's written recommendation was withdrawn at the hearing and a verbal recommendation for denial was given. After a long public hearing the Commission continued the matter, to the February 1997 meeting to give the JPA, the State Coastal Conservancy and the staff time to review engineering information relating to the feasibility of a restoration plan more in keeping with the JPA preferred plan. The JPA representatives agreed to work with the permittee to resolve outstanding concerns during the intervening months. Due to delays in the engineering studies, the matter was further postponed to the April 1997 meeting.

In the wake of the Commission's November 1996 continuation, Commission staff requested that the permittee clarify whether its amendment application had been formally revised to reflect any of the modified proposals presented by the permittee at previous hearings. In the absence of any changes identified by the permittee, staff would conduct its review of the amendment based only on the permittee's August 1996 submittal. (See letter dated January 29, 1997, Exhibit 8.) On February 21, 1997 Commission staff received a letter from the permittee dated February 14, 1997 (Exhibit 9). The letter did not provide the requested information and instead sought further postponements.

The permittee and several other interested persons have asked for yet another postponement of this matter. The staff is of the opinion that further delay of a decision on this matter is not warranted. The issues relative to the kelp reef and administration conditions of the 1991 permit amendments have been fully reviewed and discussed and

the permittee should now be directed to implement them. The information based on additional engineering work relative to wetland restoration at San Dieguito, is sufficient to enable staff to conclude that implementation of the Condition A at San Dieguito is feasible and should be carried forward with all deliberate speed. The JPA property is, unlike the situation in November 1996, now available to implement a wetland restoration project that meets the terms of Condition A.

Units 2 and 3 have been in operation for over 14 years and the public resources lost as a result have not been offset by the permittee. The Commission and the permittee have been subjected to extensive criticism for delays in carrying out the required mitigation measures.

~~Approval of the staff recommendation will~~ The Commission's April 9, 1997 action makes clear that the permittee is expected to promptly carry out the permit mitigation conditions or choose the trust fund option by June 8, 1997. Relative to the wetlands condition (Condition A), if the permittee elects not to utilize the trust fund option and does not believe a restoration project at San Dieguito for the full 150 acres of restored wetlands is feasible, the lengthy process of qualifying ~~another~~ an additional mitigation site or sites could be requested. To avoid any misunderstanding on this point however, ~~staff~~ the Commission is of the strong opinion that the full mitigation identified in Condition A is feasible at San Dieguito and that any effort to ~~shift mitigation to another~~ identify an additional location would result in an unnecessary and unjustifiable expenditure of resources by the permittee, the Commission, the JPA, and everyone else having a direct interest in this matter.

~~Commission staff, mindful of the Commission's direction to ensure timely re-scheduling of this item, has therefore placed it on the Commission's April agenda. Staff has held numerous meetings and conference calls with the permittee, attended workshops and meetings on outstanding issues concerning the San Dieguito Lagoon Plan, and worked with numerous other interested parties to resolve concerns. Staff believes there is now adequate information for the Commission to consider and act on this item.~~

Standard of Review: Coastal Act and the Original 1974 Coastal Development Permit

The Commission's standard of review for amendments is "whether the proposed development with the proposed amendment is consistent with the requirements of the Coastal Act of 1976" (Commission regulations section 13166(4)). In this case the "proposed development"—the SONGS Units 2 and 3—already exists and through its construction and operation has been causing unmitigated impacts to the marine environment since the early 1980s.

The original 1974 coastal development permit (and later modifications), which authorized the construction and operation of the SONGS Units 2 and 3, is in full force and effect and enforceable. The Commission approved the permit with the unequivocal requirement that significant adverse impacts to the marine environment would be eliminated or mitigated through compensation when they were identified. The 1991 mitigation package provides for full mitigation of the adverse marine resource impacts caused by the SONGS, thereby keeping the original approval of the SONGS Units 2 and 3 consistent with the Coastal Act.

For the Commission to approve any amendments to the existing, adopted 1991 mitigation program, the Commission must find that the changes continue to fully mitigate all identified impacts to the marine environment caused by the construction and operation of SONGS Units 2 and 3. Then, and only then, can the amendments be found consistent with the Coastal Act and with the underlying original permit.

KEY COMPONENTS OF ~~THIS STAFF RECOMMENDATION~~ THE COMMISSION'S APRIL 9, 1997 ACTION ON AMENDMENT

Condition A – Wetland Mitigation

The ~~staff recommendation, if approved by the~~ Commission's April 9, 1997 action:

- ~~results~~ Resulted in **denial** of SCE's August 1996 proposed amendments to the Condition A–Wetland Mitigation. ~~The 1991 version of permit condition A will remain in full force and effect.~~

- Reaffirmed Commission's prior 1992 decision that San Dieguito is the site that best meets the standards and objectives of this Condition A.

- Allows up to 35 acres credit for enhancement of wetland habitat at San Dieguito Lagoon.

- Established a 6-month deadline for submission of a preliminary wetland mitigation plan.

- ~~Staff recommends approval of revised Condition A to offer~~ Offered an option for the permittee to pay $55.63 million for wetland mitigation as part of the trust fund. If the permittee selects this option and pays the amount as specified, the permittee's obligations under Condition A will be completely satisfied. The amount specified for wetland restoration is based on a conceptual plan developed by the Coastal Conservancy and the San Dieguito JPA for the creation, enhancement, and substantial restoration of 150 acres of wetlands at San Dieguito (the permittee's selected and Commission approved site).

Condition B – Fish Behavioral Mitigation

- No requested amendments.

Condition C – Kelp Reef Mitigation

- ~~Staff recommends~~ The Commission ~~approval of~~ **approved** conditions that ~~would revise~~ revised SCE's August 1996 proposed amendments. The result ~~would be~~ is a recognition that new information shows kelp bed impacts of ~~122~~ 179 acres caused by SONGS. Based on earlier information the MRC projected 200 acres of impact requiring 300 acres of kelp bed mitigation (included 1.5 multiplier).

- The permit conditions require (1) the design, construction, independent monitoring and remediation of ~~122~~ 150 acres (at least 67% rock coverage) of medium to high density kelp bed community~~. This will~~ to be accomplished in two components: a 16.8 acre experimental reef to test reef design option, and at least ~~105.2~~ 133.2 additional acres of mitigation reef, and (2) $3.6 million payment to OREHP to fund a mariculture/marine fish hatchery program.

- Condition C also includes an option for the permittee to pay ~~$36.3~~ $43.84 million for kelp reef mitigation as part of the trust fund. If the permittee selects this option and pays the amount specified the permittee's obligations under Condition C will be completely satisfied.

Condition D – Administrative Structure

- ~~Staff recommends~~ The Commission ~~denial of~~ **denied** SCE's August 1996 proposed amendment to the scientific oversight and monitoring condition. SCE's amendment would eliminate the key component of the 1991 Commission permit condition that requires scientifically based monitoring and oversight independent of the permittee. ~~If the~~ The Commission's ~~approves~~ approval of the staff recommendation~~,~~ results in the 1991 version of permit Condition D ~~will remain~~ remaining in full force and effect, except as modified to add the funding option.

- ~~Staff recommends approval of~~ The Commission approved revised Condition D to offer the permittee an option to pay $8.08 million for monitoring and $6.50 million for scientific oversight that will be carried out for the operating life of SONGS. The costs in this trust fund are absolute minimums based on the best estimates of university costs and under the assumption that the trust funds for the wetland and kelp reef will be funded by the permittee and the permittee will no longer be involved in the implementation of the projects. ~~As now designed~~ As approved by the Commission, the funding option has to be accepted by the permittee in its entirety for wetland, reef, and monitoring and oversight. ~~If the Commission wishes to offer the permittee the choice of using one or two of the trust fund components, the estimated cost figures for monitoring and oversight will need to be increased.~~ If the permittee selects this option

by June 8, 1997 and funds the trust fund fully as specified, the permittee's obligations under Condition D will be completely satisfied.

- The total cost for the Trust Fund option is ~~$106.51~~ $114.05 million. The cost for the separate mariculture/fish hatchery funding to OREHP is $3.6 million. The total cost for all mitigation if the permittee chooses the trust fund option is $117.65 million. (See Appendix F—Funding Option.)

SUMMARY TABLE

Existing Commission Conditions (1991), Permittee's Proposed Amendments and Proposed Plans for Condition Compliance, and ~~Staff's Recommended~~ Commission Approved Revised Conditions.†

CONDITIONS IN THE COMMISSION'S 1991 SONGS PERMIT ACTION	PERMITTEE'S PROPOSED AMENDMENTS TO PERMIT CONDITIONS AND CONDITION COMPLIANCE	~~STAFF'S RECOMMENDED~~ COMMISSION APPROVED REVISED CONDITIONS
Condition A: Wetland Restoration Mitigation		
1991 Permit Condition: Permittee shall create or substantially restore 150 acres of coastal wetland habitat and maintain tidal flushing. No credit for enhancement of existing wetland. Condition includes detailed performance standards and independent monitoring to evaluate success and need for remediation for full operating life of the SONGS. Permittee to select mitigation site from specific list with approval of Commission. The Commission approved the San Dieguito Lagoon site in June 1992.	***Proposed Amendments:*** Amendment proposes: 1) payment of costs up to $3 million to fund wetland restoration at Ormond Beach to provide mitigation that permittee states is in excess of the required 150 acres; 2) the addition of an uncontrollable forces clause; 3) reductions in the size of buffer zones; 4) permittee to self-monitor and evaluate success; 5) reduce monitoring and remediation to 10 years; 6) to delete or change most performance standards; and 7) to change most reporting deadlines.	***~~Recommendation for~~ Commission Denial of Amendment and Approval of Funding Option:*** The Commission approv~~a~~led ~~of~~ the staff recommendation with revisions results~~ing~~ in **denial** of all of SCE's proposed amendments to Condition A. The majority of 1991 Condition A remains in full force and effect. ~~Staff recommends~~ The Commission's amendment of Condition A ~~to~~ adds an option that would allow the permittee to pay $55.63 million as a part of the trust fund for use by a third party or parties to carry out the wetland mitigation project. The fund would be used to create, enhance, and substantially restore 150 acres of wetlands at the permittee's selected site, San Dieguito Lagoon approved by the Commission in 1992. The Commission revised Condition A to: 1) Reaffirm the Commission's 1992 selection of the San Dieguito River Valley as the site for the wetland restoration project; and

† On August 19, 1996, the permittee submitted for Commission consideration a 3-volume combined package of proposed permit amendments and two plans (Experimental Kelp Reef and San Dieguito Wetlands) as condition compliance. The staff has analyzed the submittal as a package, but has separately developed findings and conditions: 1) for the proposed amendments; and 2) for approval of the plans and findings as condition compliance. The staff's approach to analyzing this submittal is necessary because the standard of review for the condition amendments is the Coastal Act, while the standard of review for condition compliance (i.e., plan approval) is the wording of the adopted conditions.

CONDITIONS IN THE COMMISSION'S 1991 SONGS PERMIT ACTION	PERMITTEE'S PROPOSED AMENDMENTS TO PERMIT CONDITIONS AND CONDITION COMPLIANCE	~~STAFF'S RECOMMENDED~~ COMMISSION APPROVED REVISED CONDITIONS
		2) Approve up to 35 acres of enhancement credit for permanent inlet maintenance at the San Dieguito site; 3) Add a funding option in the amount $55.63 million to satisfy the permittee's wetland restoration responsibilities; and 4) establish October 9, 1997 as the new deadline for submission of a preliminary wetland mitigation plan.
Basis for 1991 Condition: The MRC Final Report documents significant ongoing fish losses caused by the operations of SONGS Units 2 and 3. Data available ***after*** the MRC completed its studies suggest fish losses may be higher than calculated by the MRC. The wetland mitigation component of the 1991 Commission-approved conditions is designed to provide valuable and balanced wetland ecosystem that compensates for bight-wide losses in marine fish standing stocks due to the SONGS operation.	***Permittee's Basis for Proposed Amendments:*** The permittee proposed these amendments to address cost and design constraints it identified during the development of a preliminary wetland mitigation plan for the initially selected site, San Dieguito Lagoon. Amendment does not request credit for enhancement of existing wetland because the permittee contends that enhancement is the same as substantial restoration. The permittee's analysis of the San Dieguito project is that the 225-acre project yields 150 acres of newly created or substantially restored wetlands. Commission staff and the IWAP members dispute this analysis. To end this long-standing dispute, the permittee is proposing to augment the San Dieguito project with the additional obligations at Ormond Beach.	***~~Staff's~~ Basis for ~~Denial~~ Commission Approval of Amendment:*** The permittee's requested amendment ~~is not~~ would rendered the SONGS project inconsistent with the Coastal Act.
	Condition Compliance: Wetland Mitigation Plan The permittee submitted a preliminary mitigation plan for San Dieguito Lagoon, which the permittee	***Condition Compliance: Wetland Mitigation Plan*** ~~Staff recommends~~ The Commission **denial~~ed~~** ~~of~~ the permittee's wetland plan for San Dieguito Lagoon

CONDITIONS IN THE COMMISSION'S 1991 SONGS PERMIT ACTION	PERMITTEE'S PROPOSED AMENDMENTS TO PERMIT CONDITIONS AND CONDITION COMPLIANCE	~~STAFF'S RECOMMENDED~~ COMMISSION APPROVED REVISED CONDITIONS
	evaluates as creating or substantially restoring at least 150 acres of wetland. The staff's evaluation—based in part on a recommendation from Interagency Wetland Advisory Panel (DFG, USFWS, NMFS, ACOE, Coastal Conservancy)—of the permittee's plan shows the proposed project creates, or substantially restores approximately 92 acres of wetland. To address this dispute and the approximately 58-acre mitigation deficit, the permittee proposes to amend Condition A to provide up to $3 million for the Coastal Conservancy to implement a mitigation project at Ormond Beach wetland.	and Ormond Beach. In November 1996, the San Dieguito Joint Powers Authority (JPA) withdrew their authorization for the permittee to use the JPA property the permittee needed to implement its proposed wetland mitigation project. At the November 1996 Commission meeting, the Commission staff made a verbal recommendation of denial of SCE's wetland mitigation plan. SCE has not revised its plan since its original August 1996 submittal. The permittee's proposed Ormond Beach plan is inadequate to meet the 150 acres of required wetland mitigation, is not a site approved by the Commission, and does not meet the requirements established by the 1991 permit for the wetland restoration plan. Also, based on new information supplied in March 1997 by the JPA and the Coastal Conservancy it appears that it is feasible to carry out the full 150 acres of needed wetland mitigation at the approved San Dieguito site.
Condition B: Fish Behavioral Mitigation		
1991 Permit Condition: Permittee responsible to install fish behavioral barrier devices within the power plant in order to reduce fish losses due to impingement, and monitor effectiveness; and retention or change of devices determined by the Executive Director.	***Proposed Amendments:*** No requested amendments.	***~~Recommended Revised~~ Condition:*** No changes. Conditions in 1991 permit remain as is. Progress towards compliance with this condition continues.

CONDITIONS IN THE COMMISSION'S 1991 SONGS PERMIT ACTION	PERMITTEE'S PROPOSED AMENDMENTS TO PERMIT CONDITIONS AND CONDITION COMPLIANCE	~~STAFF'S RECOMMENDED~~ COMMISSION APPROVED REVISED CONDITIONS
Condition C: Kelp Reef Mitigation		
1991 Permit Condition: Permittee required to construct 300-acre artificial reef designed to grow kelp and establish a productive kelp bed ecosystem. Reef to be built in two phases. Information obtained from the smaller 1st phase shall be used to test designs for the larger 2nd phase. Conditions include detailed performance standards and independent monitoring with Coastal Commission oversight to evaluate success and need for remediation for full operating life of the SONGS. Permittee to select site within specific area with approval of Commission.	***Proposed Amendments:*** Amendment request would replace requirement to construct a 300-acre kelp reef with an experimental 16.8-acre reef. Eliminates all performance standards, independent monitoring and remediation. All studies of experimental reef would be completed by permittee.	***~~Recommended~~ Commission's Approval~~ed~~ ~~of~~ Revised Condition:*** ~~Staff recommends~~ The Commission approved amendment of this Condition C to: 1) accept the 16.8-acre experimental reef; 2) require an additional mitigation reef that will produce a total of ~~122~~ 150 acres of kelp and associated biota to compensate for adverse impacts caused by the SONGS operation; 3) retain the requirement for independent monitoring with Commission staff oversight; ~~and~~ 4) provide $3.6 million to fund OREHP for the purpose of funding a mariculture/marine fish hatchery program; and 5) offer an option for the permittee to pay ~~$36.3~~ $43.84 million for kelp mitigation as a part of the trust fund and thereby cap the permittee's funding responsibilities for the reef project. Information obtained from the experimental reef shall be used to design the larger (~~105.2~~ 133.2 acre) mitigation reef. The $43.84 million is exclusive of the $3.6 million to be provided to OREHP.
Basis for 1991 Condition: The MRC Final Report (1989) estimated that the area of medium to high density kelp in the San Onofre kelp bed is reduced on average by 200 acres as long as the SONGS continues to operate. The Commission required a 1.5 ratio for mitigation because of the uncertainty involved with re-creating a kelp bed community with resource values similar to a natural kelp bed community and the fact that kelp does not completely cover a rocky reef. Therefore, the total requirement in the 1991 permit conditions is for the construction of 300-acre kelp reef.	***Permittee's Basis for Amendment Request:*** Kelp studies prepared by the permittee's own contractors and completed after the MRC studies support an estimate of 48–110 acres of kelp bed impacts. An Independent Panel of three scientists (jointly selected by permittee and Commission staff) came to the **qualitative** conclusion that the "impact of SONGS on kelp abundance is much less than originally predicted by the MRC." The permittee believes that the adverse impacts to San Onofre	***Staff's Basis for Revised Condition:*** Although the Independent Panel did not make a **quantitative** determination of the level of impact to the kelp bed caused by SONGS, the Panel recommended an approach to determine the number of acres of kelp bed lost as a result of operations of SONGS. Following the recommendations of the Independent Panel, Commission staff scientists calculated the size of the reduction in the San Onofre kelp bed based on the MRC data and the permittee's data

CONDITIONS IN THE COMMISSION'S 1991 SONGS PERMIT ACTION	PERMITTEE'S PROPOSED AMENDMENTS TO PERMIT CONDITIONS AND CONDITION COMPLIANCE	~~STAFF'S RECOMMENDED~~ COMMISSION APPROVED REVISED CONDITIONS
	kelp bed is decreasing to a level of insignificance.	collected after the MRC was terminated. This calculation shows that the area of medium to high density kelp in the San Onofre kelp bed is reduced ~~on average~~ by ~~122~~ 179 acres ~~acres~~ as long as the SONGS continues to operate. (see Appendix D). Neither the permittee's own studies nor staff's estimates using the Independent Panel's approach support the permittee's estimate of 16.8 to 56 acres of kelp bed impact, or the conclusion that the adverse impact is decreasing to a level of insignificance.
	Condition Compliance: Experimental Kelp Reef The staff worked with the permittee to develop an experimental reef plan that would satisfy the 1991 experimental reef requirement. The permittee now requests that the 16.8 acre experimental reef be considered as complete condition compliance to offset all kelp bed impacts. During the November 1996 and April 1997 hearings the applicant verbally stated that the impact could be as much as 56 acres. The permittee did not officially revise its amendment request to reflect this testimony.	***Condition Compliance: Experimental Kelp Reef*** The Commission ~~staff recommends acceptance of~~ approved the permittee's current design for the 16.8 acre experimental reef as meeting the 1991 permit conditions for the Phase I reef. The Commission ~~staff's calculation shows~~ found that the impact to the kelp bed is well above 16.8 acres (~~at least 122~~ 179 acres). Therefore, the 16.8-acre reef **only provides partial compliance** with Condition C.
Condition D: Administrative Structure		
1991 Permit Condition: Permittee must pay for Commission retention of independent scientists to oversee and monitor the wetland and artificial reef mitigation projects; and public opportunity to review and comment on progress of mitigation projects. No specific cap on costs. Budgets require Commission approval.	***Proposed Amendment:*** Permittee's amendment would delete the administrative structure and replace independent monitoring of the entire mitigation program with self-monitoring. No funds would be provided for Commission oversight or technical advice. All monitoring to determine success in meeting performance standards and whether remediation is necessary would be completed by the permittee.	***~~Recommended~~ Revised Condition:*** The Commission ~~Staff recommends **denial** of~~ denied all SCE proposals to amend Condition D. The 1991 condition ~~will~~ remains in full force and effect. ~~Staff recommends~~ The Commission approved an amendment of Condition D to add an option that would allow the permittee to pay $ 8.08 million for

CONDITIONS IN THE COMMISSION'S 1991 SONGS PERMIT ACTION	PERMITTEE'S PROPOSED AMENDMENTS TO PERMIT CONDITIONS AND CONDITION COMPLIANCE	~~STAFF'S RECOMMENDED~~ COMMISSION APPROVED REVISED CONDITIONS
		monitoring and $ 6.50 million for scientific oversight as part of a trust fund. This covers monitoring and scientific oversight for the operating life of SONGS.
Basis for 1991 Condition: In its findings for 1991 resolution, the Commission stated "[t]he most effective and reliable means of achieving the compensation objectives described in this permit is through independent, third party monitoring and adaptive management."	***Permittee's Basis for Amendment Request:*** Permittee states that it should be treated as other permittees carrying out similar mitigation projects. Permittee believes that self-monitoring with Commission review (without any funding from permittee) is adequate. Permittee believes independent monitoring would be too expensive.	***~~Staff's~~ Basis for Commission's Revised Condition:*** The Commission found that ~~I~~independent monitoring removes all doubts and concerns about objectivity in judging the success of the mitigation program and is no more costly than self-monitoring. Further, the permittee fully embraced and supported the requirement for monitoring and remediation independent of the permittee at 1991 permit hearing. Permittee has already obtained the benefits of the original 1974 permit by the construction and operation of SONGS since the early 1980's. To address permittee cost containment concerns the ~~staff is recommending that~~ Commission's approval offers the permittee ~~have~~ the option to pay a grand total of ~~$106.51~~ $114.05 million into a trust fund to cap the costs and satisfy the permittee's responsibility for the wetland project implementation, the reef project implementation, and independent monitoring and Commission scientific oversight. The permittee is also required to pay $3.6 million to OREHP for mariculture/marine fish hatchery program.
Condition E: MRC Data Maintenance		
1991 Permit Condition: Condition E requires that the permittee provide adequate funding to make MRC's valuable scientific data available for public use.	***Proposed Amendments:*** No proposed amendments.	***Recommended Revised Condition:*** Permittee is in compliance with this condition.

CONDITIONS IN THE COMMISSION'S 1991 SONGS PERMIT ACTION	PERMITTEE'S PROPOSED AMENDMENTS TO PERMIT CONDITIONS AND CONDITION COMPLIANCE	~~STAFF'S RECOMMENDED~~ COMMISSION APPROVED REVISED CONDITIONS
Condition F: Marine Fish Hatchery*		
1991 Permit Condition: In November 1991 when the Commission adopted the mitigation package (Conditions A–E above) the Commission directed the staff to "explore and bring back to the Commission the possibility of a fish hatchery program for ocean release." On May 13, 1992, the Commission required the permittee to provide $1.2 million toward the construction of a marine fish hatchery. On March 17, 1993, the Commission adopted Condition F: Marine Fish Hatchery which includes a detailed description of how the $1.2 million in funds will be paid and spent and specifies a required memorandum of agreement with Department of Fish and Game and others to assure that important protocols for the marine fish hatchery are implemented. The Commission found that a marine hatchery cannot serve as "stand-alone mitigation" because of insufficient scientific evidence regarding the effectiveness of a fish hatchery in enhancing marine fish populations.	***Proposed Amendments:*** No requested amendments.	***Recommended Revised Condition:*** No Changes. Permittee has paid the full $1.2 million and therefore is in full compliance with this condition. The marine fish hatchery has been constructed (in part with funds from the permittee) and has begun operations.

24/roberto/condsum.doc

* The Marine Fish Hatchery condition was mislabeled as Condition E when approved. The Marine Fish Hatchery condition should actually be Condition F.

~~STAFF RECOMMENDATION~~COMMISSION ACTION

The ~~staff recommends that the~~ Commission adopted the following **four** resolutions:

I. RESOLUTIONS

A. APPROVAL OF THE AMENDED COASTAL DEVELOPMENT PERMIT 6-81-330-A WITH CONDITIONS

The Commission hereby **grants**, subject to the standard and special conditions below, a permit amendment for 6-81-330 to revise Special Conditions A, C, and D on the grounds that the proposed development with the proposed amendments, as conditioned, conforms with the provisions of the California Coastal Act of 1976 and conforms with the California Environmental Quality Act.

B. DENIAL OF THE SAN DIEGUITO LAGOON PRELIMINARY WETLANDS RESTORATION PLAN

The Commission hereby **rejects** the San Dieguito Lagoon Preliminary Wetlands Mitigation Plan on the grounds that it does not conform with the requirements of Special Condition A.

C. DENIAL OF ORMOND BEACH WETLAND RESTORATION AND MANAGEMENT PLAN

The Commission hereby **rejects** the south Ormond Beach Wetland restoration and management plan on the grounds that it does not conform with the requirements of Special Condition A.

D. APPROVAL OF THE EXPERIMENTAL ARTIFICIAL KELP REEF PLAN WITH REVISIONS

The Commission hereby finds that, if revised as set forth below, the Experimental Artificial Reef Plan conforms with the requirements of the Preliminary Plan for the experimental artificial reef of Special Condition C (as amended herein according to Resolution I-A).

II. STANDARD CONDITIONS (SEE ATTACHMENT 1)

III. SPECIAL CONDITIONS

NOTE: The following italicized text represents language from the 1991 permit conditions. The non-italicized text is the language added or revised by the 1997 amendment. Strikeout and underline reflect Commission changes to staff-recommended conditions of March 21, 1997.

The Commission approves the amendment of permit 6-81-330 only if Conditions A, C, and D of permit 6-81-330 are amended as set forth below.[1] Condition A describes the requirements for a wetland mitigation project that compensates for past, present and future fish impacts from the SONGS Units 2 and 3. Condition C describes requirements for artificial reefs and funding for a mariculture/fish hatchery program necessary to mitigate/compensate for adverse impacts to the San Onofre Kelp bed community caused by the discharge of water used to cool SONGS Units 2 and 3. Condition D describes an administrative structure necessary to ensure independent monitoring and scientific oversight of the required mitigation projects. (Appendix C provides mark-up versions of the permittee's proposed condition amendments.)

A. CONDITION A: WETLAND MITIGATION

NOTE: The following italicized text is the original version of the Commission's 1991 permit Condition A. The non-italicized text is the language added or revised by the 1997 amendment. Strikeout and underline reflect Commission changes to staff-recommended conditions of March 21, 1997. ~~The staff is recommending that the wording remain in full force and effect, and the permittee's August 1996 amendment application be rejected. The staff is recommending that~~ In its April 9, 1997 action, the Commission revised Condition A to: (a) reaffirm the Commission's 1992 selection of San Dieguito River Valley as the site for wetland restoration; (b) grant up to 35 acres of enhancement credit for inlet maintenance if wetland restoration is done at San Dieguito; and, ~~be revised to~~ (c) add an optional trust fund to satisfy the permittee's responsibilities (Condition A.4.).

1.0 SITE SELECTION AND PRELIMINARY PLAN[2]

In consultation with Commission staff, the permittee shall select a wetland restoration site and develop a preliminary plan in accordance with the following process and terms.

Within 9 months of the effective date of this permit, the permittee shall submit the proposed site ~~and preliminary wetland restoration plan~~ to the Commission for its review

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[1] No amendments to Special Conditions B, E, and F were requested by the permittee, so these conditions apply as originally stated. Appendix B includes the original text for Special Conditions A through F.
[2] ~~Text that is the same text as the 1991 Conditions is in italics.~~

and approval or disapproval.[3] Within 6 months of the Commission's approval of this permit amendment and no later than October 9, 1997, the permittee shall submit the preliminary restoration plan to the Commission for its review and approval or disapproval.

1.1 Site Selection

The location of the wetland restoration project shall be within the Southern California Bight. The permittee shall evaluate and select from sites including, but not limited to, the following eight sites: Tijuana Estuary in San Diego County, San Dieguito River Valley in San Diego County, Huntington Beach Wetland in Orange County, Anaheim Bay in Orange County, Santa Ana River in Orange County, Los Cerritos Wetland in Los Angeles County, Ballona Wetland in Los Angeles County, and Ormond Beach in Ventura County. Other sites proposed by the permittee may be added to this list with the Executive Director's approval.

The basis for the selection shall be an evaluation of the sites against the minimum standards and objectives set forth in subsections 1.3 and 1.4 below. The permittee shall take into account and give serious consideration to the advice and recommendations of an Interagency Wetland Advisory Panel, established and convened by the Executive Director. The permittee shall select the site that meets the minimum standards and best meets the objectives.

On June 11, 1992, the Commission approved the permittee's selected restoration site, the San Dieguito River Valley. On April 9, 1997, the Commission reaffirmed its prior determination that San Dieguito River Valley is the restoration site that meets the minimum standards and best meets the objectives of this Condition A. The permittee can propose an additional site for restoration only if achieving all 150 acres of restoration at San Dieguito River Valley becomes infeasible due to hydrology or other engineering concerns. In that event, the additional substantial restoration or creation needed to meet the 150 acre requirement can be completed at another site subject to Commission approval in accordance with the site selection and planning processes set forth in this condition.

1.2 Preliminary Restoration Plan

In consultation with Commission staff, the permittee shall develop a preliminary wetland restoration plan for the wetland site identified through the site selection process. The preliminary wetland restoration plan shall meet the minimum standards and incorporate as many as possible of the objectives in subsections 1.3 and 1.4, respectively.

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[3] San Dieguito River Valley.

The preliminary wetland restoration plan shall include the following elements:

a. *Review of existing physical, biological, and hydrological conditions; ownership, land use and regulation.*

b. *Site-specific and regional restoration goals and compatibility with the goal of mitigating for SONGS impact to fish.*

c. *Identification of site opportunities and constraints.*

d. *Conceptual restoration design, including:*

   1. *Proposed grading and excavation; water control structures; planting; integration of public access, if feasible; buffers and transition areas; management and maintenance requirements.*

   2. *Proposed habitat types (including approximate size and location).*

   3. *Preliminary assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits.*

   4. *Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property interests.*

   5. *A graphic depiction of proposed plan.*

1.3 Minimum Standards

The wetland restoration project site and preliminary plan must meet the following minimum standards:

a. *Location within Southern California Bight.*

b. *Potential for restoration as tidal wetland, with extensive intertidal and subtidal areas;*

c. *Creates or substantially restores a minimum of 150 acres (60 hectares) of wetlands, excluding buffer zone and upland transition area.* If the full 150 acre restoration project is carried out at San Dieguito River Valley or if, pursuant to condition A.1.1., an additional site to complete the mitigation requirement is approved by the Commission, up to 35 acres of enhancement credit will be given for permanent, continuous tidal maintenance. The enhancement credit allows the permittee to satisfy up to 35 of the 150 required acres by permanently maintaining the tidal inlet. The 35 acres of enhancement credit is based upon the determination that 126 acres of existing wetlands at San Dieguito Lagoon will be enhanced by 28% if the tidal flows are continuously maintained. However, if the final restoration plan provides for enhancement of less than 126 acres through tidal maintenance, the

exact amount of enhancement credit shall be equal to 28% of the total number of tidal wetland acres that are enhanced by tidal maintenance.

d. *Provides a buffer zone of a size adequate to ensure protection of wetland values, and not less than at least 100 feet wide, as measured from the upland edge of the transition area.*

e. *Any existing site contamination problems would be controlled or remediated and would not hinder restoration.*

f. *Site preservation is guaranteed in perpetuity (through appropriate public agency or nonprofit ownership, or other means approved by the Executive Director), to protect against future degradation or incompatible land use.*

g. *Feasible methods are available to protect the long-term wetland values on the site, in perpetuity.*

h. *Does not result in loss of existing wetlands.*

i. *Does not result in impact on endangered species.*

1.4 Objectives

The following objectives represent the factors that will contribute to the overall value of the wetland. The selected site shall be that with the best potential to achieve these objectives. These objectives shall also guide preparation of the restoration plan.

a. *Provides maximum overall ecosystem benefits e.g. maximum upland buffer, enhancement of downstream fish values, provides regionally scarce habitat, potential for local ecosystem diversity.*

b. *Provides substantial fish habitat compatible with other wetland values at the site.*

c. *Provides a buffer zone of an average of at least 300 feet wide, and not less than 100 feet wide, as measured from the upland edge of the transition area.*

d. *Provides maximum upland transition areas (in addition to buffer zones);*

e. *Restoration involves minimum adverse impacts on existing functioning wetlands and other sensitive habitats.*

f. *Site selection and restoration plan reflect a consideration of site specific and regional wetland restoration goals.*

g. *Restoration design is that most likely to produce and support wetland-dependent resources.*

h. *Provides rare or endangered species habitat.*

i. Provides for restoration of reproductively isolated populations of native California species.

j. Results in an increase in the aggregate acreage of wetland in the Southern California Bight.

k. Requires minimum maintenance.

l. Restoration project can be accomplished in a timely fashion.

m. Site is in proximity to SONGS.

1.6 Restrictions

(a) The permittee may propose a wetland restoration project larger than the minimum necessary size specified in subsection 1.3(c) above, if biologically appropriate for the site, but the additional acreage must (1) be clearly identified, and (2) must not be the portion of the project best satisfying the standards and objectives listed above.

(b) If the permittee jointly enters into a restoration project with another party: (1) the permittee's portion of the project must be clearly specified, (2) any other party involved cannot gain mitigation credit for the permittee's portion of the project, and (3) the permittee may not receive mitigation credit for the other party's portion of the project.

(c) The permittee may propose to divide the mitigation requirement between a maximum of two wetland restoration sites, unless there is a compelling argument, approved by the Executive Director, that the standards and objectives of subsections 1.3 and 1.4 will be better met at more than two sites.

2.0 FINAL PLAN AND PLAN IMPLEMENTATION

2.1 Final Restoration Plan

Within 12 months following the Commission's approval of a site selection and preliminary restoration plan, the permittee shall submit a final restoration plan along with CEQA documentation generated in connection with local or other state agency approvals, to the Executive Director of the Coastal Commission for review and approval. The final restoration plan shall substantially conform to the approved preliminary restoration plan as originally submitted or as amended by the Commission pursuant to a request by the permittee. The final restoration plan shall include, but not be limited to the following elements:

a. Detailed review of existing physical, biological, and hydrological conditions; ownership, land use and regulation.

b. *Evaluation of site-specific and regional restoration goals and compatibility with the goal of mitigating for SONGS impacts to fish.*

c. *Identification of site opportunities and constraints.*

d. *Schematic restoration design, including:*

   1. *Proposed cut and fill, water control structures, control measures for stormwater, buffers and transition areas, management and maintenance requirements.*

   2. *Planting Program, including removal of exotic species, sources of plants and or seeds (local, if possible), protection of existing salt marsh plants, methods for preserving top soil and augmenting soils with nitrogen and other necessary soil amendments before planting, timing of planting, plans for irrigation until established, and location of planting and elevations on the topographic drawings.*

   3. *Proposed habitat types (including approximate size and location).*

   4. *Assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits.*

   5. *Location, alignment and specifications for public access facilities, if feasible.*

   6. *Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property rights.*

   7. *Cost estimates.*

   8. *Topographic drawings for final restoration plan at 1" = 100 foot scale, one foot contour interval.*

   9. *Drawings shall be directly translatable into final working drawings.*

2.2 Wetland Construction Phase

Within 6 months of approval of the final restoration plan, subject to the permittee's obtaining the necessary permits, the permittee shall commence the construction phase of the wetland restoration project. The permittee shall be responsible for ensuring that construction is carried out in accordance with the specifications and within the timeframes specified in the approved final restoration plan and shall be responsible for any remedial work or other intervention necessary to comply with final plan requirements.

2.3 Timeframe for Resubmittal of Project Elements

If the Commission does not approve any element of the project (i.e. site selection, restoration plan), the Commission will specify the time limits for compliance relative to selection of another site or revisions to the restoration plan.

3.0 WETLAND MONITORING, MANAGEMENT AND REMEDIATION

Monitoring, management (including maintenance), and remediation shall be conducted over the "full operating life" of SONGS Units 2 and 3. "Full operating life" as defined in this permit includes past and future years of operation of SONGS units 2 and 3 including the decommissioning period to the extent there are continuing discharges. The number of past operating years at the time the wetland is ultimately constructed, shall be added to the number of future operating years and decommission period, to determine the length of the monitoring, management and remediation requirement.

The following section describes the basic tasks required for monitoring, management and remediation. Condition II-D specifies the administrative structure for carrying out these tasks, including the roles of the permittee and Commission staff.

3.1 Monitoring and Management Plan

A monitoring and management plan will be developed in consultation with the permittee and appropriate wildlife agencies, concurrently with the preparation of the restoration plan, to provide an overall framework to guide the monitoring work. It will include an overall description of the studies to be conducted over the course of the monitoring program and a description of management tasks that are anticipated, such as trash removal. Details of the monitoring studies and management tasks will be set forth in a work program (see Section II-D).

3.2 Pre-restoration site monitoring

Pre-restoration site monitoring shall be conducted to collect baseline data on the wetland attributes to be monitored. This information will be incorporated into and may result in modification to the overall monitoring plan.

3.3 Construction Monitoring

Monitoring shall be conducted during and immediately after each stage of construction of the wetland restoration project to ensure that the work is conducted according to plans.

3.4 Post-Restoration Monitoring and Remediation

Upon completion of construction of the wetland, monitoring shall be conducted to measure the success of the wetland in achieving stated restoration goals (as specified in restoration plan) and in achieving performance standards, specified below. The permittee shall be fully responsible for any failure to meet these goals and standards during the full operational years of SONGS Units 2 and 3. Upon determining that the goals or standards are not achieved, the Executive Director shall prescribe remedial measures, after consultation with the permittee, which shall be immediately implemented by the permittee with Commission staff direction. If the permittee does not agree that remediation is necessary, the matter may be set for hearing and disposition by the Commission.

Successful achievement of the performance standards shall (in some cases) be measured relative to approximately four reference sites, which shall be relatively undisturbed, natural tidal wetlands within the Southern California Bight. The Executive Director shall select the reference sites. The standard of comparison i.e. the measure of similarity to be used (e.g. within the range, or within the 95% confidence interval) shall be specified in the work program.

In measuring the performance of the wetland project, the following physical and biological performance standards will be utilized:

a. *Long-term Physical Standards. The following long-term standards shall be maintained over the full operative life of SONGS Units 2 and 3.*

   1) *Topography. The wetland shall not undergo major topographic degradation (such as excessive erosion or sedimentation).*

   2) *Water Quality. Water quality variables [to be specified] shall be similar to reference wetlands.*

   3) *Tidal prism. The designed tidal prism shall be maintained, and tidal flushing shall not be interrupted.* If the full 150 acre restoration project is carried out at San Dieguito River Valley or if, pursuant to condition A.1.1., an additional site to complete the mitigation requirement is approved by the Commission, up to 35 acres of enhancement credit will be given for permanent continuous tidal maintenance. The enhancement credit allows the permittee to satisfy up to 35 of the 150 required acres by permanently maintaining the tidal inlet. The 35 acres of enhancement credit is based upon the determination that 126 acres of existing wetlands at San Dieguito Lagoon will be enhanced by 28% if the tidal flows are continuously maintained. However, if the final restoration plan provides for enhancement of less than 126 acres through tidal maintenance, the exact amount of enhancement credit shall be equal to 28% of the total number of tidal wetland acres that are enhanced by tidal maintenance.

4) *Habitat Areas. The area of different habitats shall not vary by more than 10% from the areas indicated in the final restoration plan.*

b. *Biological Performance Standards. The following biological performance standards shall be used to determine whether the restoration project is successful. Table 1, below, indicates suggested sampling locations for each of the following biological attributes; actual locations will be specified in the work program.*

1) *Biological Communities. Within 4 years of construction, the total densities and number of species of fish, macroinvertebrates and birds (see table 1) shall be similar to the densities and number of species in similar habitats in the reference wetlands.*

2) *Vegetation. The proportion of total vegetation cover and open space in the marsh shall be similar to those proportions found in the reference sites. The percent cover of algae shall be similar to the percent cover found in the reference sites.*

3) *Spartina Canopy Architecture. The restored wetland shall have a canopy architecture that is similar in distribution to the reference sites, with an equivalent proportion of stems over 3 feet tall.*

4) *Reproductive Success. Certain plant species, as specified by in the work program, shall have demonstrated reproduction (i.e. seed set) at least once in three years.*

5) *Food Chain Support. The food chain support provided to birds shall be similar to that provided by the reference sites, as determined by feeding activity of the birds.*

6) *Exotics. The important functions of the wetland shall not be impaired by exotic species.*

Table 1~~1~~: Suggested sampling locations.

	Salt Marsh			*Open Water*			*Tidal*
	Spartina	*Salicornia*	*Upper*	*Lagoon*	*Eelgrass*	*Mudflat*	*Creeks*
1) Density/spp:							
Fish				X	X	X	X
Macroinverts				X	X	X	X
Birds	X	X	X	X		X	X
2) % Cover							
Vegetation	X	X	X		X		
algae	X	X				X	
3) Spar. arch.	X						
4) Repro. suc.	X	X	X				
5) Bird feeding				X		X	X
6) Exotics	X	X	X	X	X	X	X

4.0 FUNDING OPTION FOR WETLAND RESTORATION

As part of the total funding option package provided in revised Condition D, the permittee has the option of satisfying the requirements of Sections 1, 2, and the remediation portion of Section 3 of Condition A by paying the amounts specified for wetland restoration in accordance with the provisions set forth in Sections 4.0 through 4.3 of Condition D.

B. CONDITION C: KELP REEF MITIGATION

NOTE: The following text of revised Condition C includes key elements of the Commission's 1991 permit condition. Strikeout and underline reflect Commission changes to staff-recommended conditions of March 21, 1997. Site assessment, site selection, and performance standards and monitoring are substantially the same as the 1991 condition. The changes that the ~~staff is recommending~~ Commission approved are:

1. Clarification and modification of the condition as it relates to the two phases of the reef (experimental and mitigation reef). These changes include more specifics about the goals of the experimental reef.

2. Reduction of the size of the reef required in the 1991 permit condition from 300 acres to ~~122~~ 150 acres and the addition of $3.6 million to OREHP to fund a mariculture/fish hatchery program.

Mitigation for losses to kelp bed resources through the construction of an artificial reef will occur in two phases, an initial experimental phase followed by a mitigation phase.

1.0 EXPERIMENTAL REEF

The permittee shall, using qualified professionals and in consultation with the Executive Director, select a site and construct an experimental artificial reef for kelp to determine the optimal reef design for mitigating resource losses at the San Onofre Kelp bed (SOK) caused by SONGS' operation. The experimental reef shall test the design parameters necessary to provide a persistent giant kelp forest and associated ecosystem.

1.1 Site Assessment

The permittee shall select at least three potential sites and conduct pre-construction site assessments at these potential sites.

The permittee shall obtain sufficient information about each potential experimental reef site to allow the permittee to determine which site best meets the final site selection criteria described below. This information shall be used in both the site selection and design of the experimental reef. Necessary information shall include: (1) a description of existing biota at the site, (2) a reasonable prediction of the likelihood that a healthy kelp bed will be established and persist at the site, (3) a reasonable prediction of the extent of rock burial due to sediment deposition and/or sinking into soft sediment that could be expected at the site, and (4) a prediction of the effect of the proposed reef on local sand transport and local beach profiles.

1.2 Final Site Selection

Selection of the actual experimental reef site from among the potential sites shall be based on, but not limited to, the following criteria:

1. Location as close as possible to the SOK, and preferably between Dana Point (Orange Co.) and Carlsbad (San Diego Co.), but outside the influence of the SONGS discharge plume and water intake, and away from Camp Pendleton.

2. Minimal disruption of natural reef or cobble habitats and sensitive or rare biotic communities.

3. Suitable substrate with low mud and/or silt content (e.g., hard-packed fine to coarse grain sand, exposed cobble or bedrock without a persistent kelp biological community, or cobble or bedrock covered with a thin layer of sand).

4. Location at a depth locally suitable for kelp growth and recruitment.

5. Location near a persistent natural kelp bed.

6. Location away from sites of major sediment deposition.

7. Minimal interference with uses such as vessel traffic, vessel anchorages, commercial fishing, mariculture, mineral resource extraction, cable or pipeline corridors.

8. Location away from power plant discharges, waste discharges, dredge spoil deposition sites, and activities of the U. S. Marine Corps.

9. Location that will not interfere with or adversely affect resources of historical or cultural significance such as shipwrecks and archeological sites.

1.3 Experimental Reef Design and Final Plan

The permittee shall submit a preliminary plan describing the location and design of the experimental reef to the Executive Director for review and approval. Following the ~~site selection process~~ Executive Director's approval of the preliminary plan, but no later than June 30, 1997, the permittee shall apply for a coastal development permit for construction of an experimental reef for kelp. The coastal development permit application shall include an experimental reef plan that specifies the design and construction methods of the experimental reef. The design of the reef shall allow for identification of those parameters important to the establishment of a persistent, healthy giant kelp forest and associated ecosystem.

The primary goal of the experimental reef shall be to test several different substrate types and configurations to determine which of these can best provide: (1) adequate conditions for giant kelp recruitment, growth, and reproduction and (2) adequate conditions to establish a community of reef-associated biota. Information gained from the experimental reef will be used in designing the mitigation phase of Condition C. This will help to ensure full compensation for kelp bed losses in a cost-effective manner.

The total areal extent (as measured at the ocean bottom and equal to the surface area within the perimeter of the reef's outermost hard substrate/sand interface area, as installed by the permittee) of the experimental reef shall be a minimum of 16.8 acres.

1.4 Experimental Reef Construction

The experimental reef shall be constructed within 12 months of approval of the coastal development permit for the experimental reef. A post-construction survey shall be carried out by the permittee to demonstrate that the experimental reef was built to approved specifications. If the Executive Director determines that the reef was not built to specifications, the permittee shall modify the reef to meet the approved specifications

within 90 days of the post-construction survey. Extension of this time limit may be granted by the Executive Director for good cause.

1.5 Experimental Reef Monitoring

The experimental reef shall be monitored independent of the permittee (as per Condition D) for ~~at least~~ 5 years~~, but no more than 10 years. The Executive Director shall determine the length of monitoring based on information from the monitoring program within six months of approval of a coastal development permit for the experimental reef~~. A monitoring plan will be developed by Commission scientists pursuant to Condition D. The independent monitoring program for the experimental reef shall be designed to assess the effectiveness of alternative reef designs, materials and management techniques. Monitoring shall be conducted with funds provided by the permittee through Condition D and shall include the monitoring and management of any additional experiments deemed necessary by the Executive Director. Successful completion of the experimental reef does not depend on the achievement of performance standards. However, information on the performance of different module designs will be used to identify those designs that would be likely to meet the performance standards for the mitigation reef. This information will be used to design the most cost-effective mitigation reef that is ~~like~~ likely to meet the performance standards listed in Section 2 below.

2.0 MITIGATION REEF

In addition to construction of the 16.8-acre experimental reef, the permittee shall be responsible for the construction of at least ~~105.2~~ 133.2 acres of artificial reef (yielding a minimum of ~~122~~ 150 acres of artificial reef hereafter referred to as the "mitigation reef") that meets the performance standards listed below as mitigation for the resource losses at the San Onofre Kelp bed (SOK) caused by operation of the SONGS. The larger artificial reef may be an expansion of the experimental reef or may be established in a different location, provided that the larger reef shall be located in the vicinity of SONGS, but outside the influence of SONGS discharge plume and water intake. The selection of a site for the larger artificial reef shall be based on the final site selection criteria stated in Section 1.2 above.

The purpose of the mitigation reef is to provide kelp bed community resources to replace the resources lost due to the operation of SONGS Units 2 and 3. Thus, the mitigation reef shall be designed to replace the lost and damaged resources at the San Onofre kelp bed and result in production of a persistent giant kelp forest and associated ecosystem.

2.1 Mitigation Reef Design and Planning

Within six months after completion of independent monitoring of the experimental reef, the permittee shall submit a preliminary plan describing the location and design of the mitigation reef to the Executive Director for review and approval. The type of hard substrate and the percent cover of hard substrate proposed in the preliminary plan for the mitigation reef shall be determined by the Executive Director.

The Executive Director will consult with the Coastal Commission scientists, scientific advisors, resource agencies, and others as appropriate to evaluate whether the preliminary plan meets the goals set forth in Section 2.2 below. Within one month following the Executive Director's determination that the preliminary plan meets the specified criteria, the permittee shall initiate development of a final mitigation plan along with appropriate CEQA and/or NEPA environmental impact analyses necessary in connection with local, State or other agency approvals.

Within twelve months of the Executive Director's approval of a preliminary plan for the mitigation reef, the permittee shall submit a final mitigation plan to the Coastal Commission in the form of a coastal development permit application. The final plan shall specify location, depth, overall hard substrate coverage, size and dispersion of reef materials, and reef relief and shall substantially conform to the preliminary plan approved by the Executive Director.

2.2 Mitigation Reef Goals

The primary goals of the mitigation reef shall be to provide adequate conditions for a community of reef-associated biota similar in composition, diversity and abundance to the San Onofre kelp bed that ~~fully~~ compensate for the losses incurred by SONGS operations.

2.3 Mitigation Reef Construction

The permittee shall construct the reef in accordance with the final plan in the approved coastal development permit. The permittee shall begin construction of the reef no later than 6 months after Commission approval of a coastal development permit for the reef. The permittee shall complete a post-construction survey to demonstrate that the reef was built to approved specifications. If the Executive Director determines that the reef was not built to specifications, the permittee shall modify the reef to meet the approved specifications within 90 days of the post-construction survey. Extension of this time limit may be granted by the Executive Director for good cause.

2.4 Monitoring

After construction of the mitigation reef is completed, the reef will be monitored, managed, and, if necessary, remediated. The following sections describe the basic tasks required for monitoring the mitigation reef pursuant to this Condition. Condition D specifies that the permittee shall provide funds to the Commission or an independent entity designated by the Executive Director for the purpose of completing the monitoring, as specified below.

A monitoring plan for the mitigation reef shall be developed by the Commission staff scientists pursuant to Condition D. The monitoring plan shall be completed within six months of approval of a coastal development permit for the mitigation reef proposed in a final plan developed pursuant to this condition. The monitoring plan shall provide an overall framework to guide the monitoring work. The monitoring plan shall describe the sampling methodology, analytical techniques, and methods for measuring performance of the mitigation reef relative to the performance standards identified below.

Monitoring independent of the permittee shall be implemented in accordance with Condition D to: (1) determine whether the performance standards of this condition are met (i.e., whether the mitigation reef successfully replaces the lost and damaged resources in the San Onofre Kelp bed), (2) if necessary, determine the reasons why any performance standard has not been met, and (3) develop recommendations for appropriate remedial measures. The permittee shall be responsible for fully implementing any remedial measures deemed necessary by the Executive Director.

Following completion of construction the mitigation reef shall be monitored for a period equivalent to the operating life of SONGS. The independent monitoring program for the mitigation reef shall be designed to assess whether the performance standards have been met. If these standards are met after ten years following the completion of construction, then monitoring can be reduced to annual site inspections. The permittee shall undertake necessary remedial actions based on the monitoring results and annual site inspections for the full operating life of the SONGS Units 2 and 3.

The following performance standards shall be used in measuring the success of the mitigation reef to determine whether remediation is necessary:

a. Substrate

    1. The reefs shall be constructed of rock, concrete, or a combination of these materials, as determined from results of the experimental reef to be suitable for sustaining a kelp forest and a community of reef-associated biota similar in composition, diversity and abundance to the San Onofre kelp bed.

    2. The total areal extent of the mitigation reef (including the experimental reef and all larger artificial reefs) shall be no less than ~~122~~ 150 acres.

3. At least two-thirds (67 percent) of the ~~122~~ 150-acre mitigation reef area shall be covered by exposed hard substrate. Should the results of the experimental reef indicate that a different coverage of hard substrate is necessary or adequate to meet this goal (as determined by the Executive Director), the Executive Director may change the coverage requirement.

4. At least 90 percent of the exposed hard substrate must remain available for attachment by reef biota. The permittee shall be required to add sufficient hard substrate to the mitigation reef to replace lost or unsuitable hard substrate, if at any time the Executive Director determines that more than 10 percent of the hard substrate within the reef has become covered by sediment, or has become unsuitable for growth of attached biota due to scouring, and there is no sign of recovery within three years. The Commission scientists in accordance with Condition D shall initiate surveys to monitor the amount and distribution of exposed hard substrate. These surveys shall begin immediately after construction is complete and continue for at least ten years.

b. Kelp bed

The artificial reef(s) shall sustain ~~122~~ 150 acres of medium-to-high density giant kelp. For purposes of this condition, medium-to-high density giant kelp is defined as more than 4 adult *Macrocystis pyrifera* plants per 100 m^2 of substrate, as determined by down-looking sonar surveys or equivalent monitoring techniques in accordance with Condition D. If the average area of medium to high density giant kelp falls below ~~122~~ 150 acres, then the reason for this failure shall be determined by independent monitoring overseen by Commission scientists. The permittee shall implement any remedial measures deemed necessary by the Executive Director.

The permittee's remediation requirement shall include the funding of independent studies that are necessary to determine the reasons for lack of kelp coverage as well as feasible corrective action, as determined by the Executive Director. If the failure is due to insufficient hard substrate, the corrective action shall entail the permittee adding more hard substrate to the reef.

If sufficient hard substrate appears to be available but kelp recruitment is low, then corrective action could include the permittee funding independent studies of kelp recruitment that are designed to determine the best method of establishing kelp on the reef. The Executive Director shall determine whether such studies are necessary.

The method determined by the Executive Director most likely to be a successful and reliable corrective action for low kelp abundance shall be implemented by the permittee until kelp coverage meets this performance standard; however, kelp establishment or augmentation methods shall not be required for more than a total

of five years. If oceanographic conditions are unfavorable to kelp during part of this period, the Executive Director may defer the effort to establish kelp.

c. Fish

The standing stock of fish at the mitigation reef shall be at least 28 tons and the following performance standards shall hold:

1. The resident fish assemblage shall have a total density and number of species similar to natural reefs within the region.
2. Fish reproductive rates shall be similar to natural reefs within the region.
3. The total density and number of species of young-of-year fish (fish less than 1 year old) shall be similar to natural reefs within the region.
4. Fish production shall be similar to natural reefs within the region.

d. Benthos

1. The benthic community (both algae and macroinvertebrates) shall have coverage or density and number of species similar to natural reefs within the region.
2. The benthic community shall provide food-chain support for fish similar to natural reefs within the region.
3. The important functions of the reef shall not be impaired by undesirable or invasive benthic species (e.g., sea urchins or *Cryptoarachnidium*).

Independent monitoring data collected concurrently at natural kelp bed reference sites within the region shall be used by Commission scientists to determine the similarity for each variable listed above. The standard of comparison (i.e., the measure of similarity to be used and the method for determining the statistical significance of differences) shall be specified in the monitoring plan. If the standards listed above are not met within ten years after reef construction, then the permittee shall undertake those remedial actions the Executive Director deems appropriate and feasible.

The permittee shall insure that the performance standards and goals set forth in this condition will be met for at least the length of time equivalent to the full operating life of SONGS Units 2 and 3.[4] Upon completion of ten years of independent monitoring that demonstrate the mitigation reef is in compliance of the performance standards, the permittee shall be fully responsible for funding independent annual site inspections, which will serve to identify any noncompliance with the performance standards. The monitoring

[4] "Full operating life" as defined in this permit includes past and future years of operation of SONGS Units 2 and 3, including the decommissioning period to the extent there are continuing discharges.

plan (specified above) shall describe the requirements and methods of the annual site inspections.

The Executive Director may also use any other information available to determine whether the performance standards are being met. If information from the annual site inspections or other sources suggests the performance standards are not being met, then the permittee shall be required to fund an independent study to collect the information necessary to determine what remediation is needed. The Executive Director shall determine the required remedial actions based on information from the independent study. The permittee shall be required to implement any remedial measures determined necessary by the Executive Director in consultation with state and federal resource agencies, as well as provide funds for independent monitoring that evaluates the success of the required remediation. As described under the funding option (Condition D) of this permit, the cost of remediation shall not be limited if the permittee elects to implement the mitigation reef.

3.0 FUNDING REQUIREMENT FOR MARICULTURE/FISH HATCHERY PROGRAM

No later than June 8, 1997, the permittee shall establish an interest-bearing account (internal or external) in the amount of $3.6 million for a mariculture/fish hatchery program operated by the State of California through the Ocean Resource Enhancement and Hatchery Program (OREHP) to compensate for losses to the kelp bed community that are not mitigated by the artificial reef. The California Department of Fish and Game, the Ocean Resources Enhancement Advisory Panel, and the Coastal Commission shall enter into a Memorandum of Agreement to direct the expenditure of these funds, including provisions for continuation of the Joint Panel to oversee the evaluation and genetic quality assurance of the hatchery program. Within thirty (30) days after the permittee receives written notice from the Executive Director that OREHP has established an account, the permittee shall deposit the entire $3.6 million plus accrued interest in the OREHP account. Interest shall accrue from the date the permittee establishes its account. Interest shall be calculated using rates equivalent to the Federal Reserve Bank for 6-month U.S. Government Securities Treasury bills (discount rate) and shall be adjusted quarterly in accordance with the current rate. Interest shall be compounded monthly.

~~3.0~~ 4.0 FUNDING OPTION FOR KELP REEF MITIGATION

As part of the total funding option package provided in revised Condition D, the permittee has the option of satisfying the requirements of Sections 1 and 2 of Condition C by paying the amount specified for kelp bed mitigation in accordance with the provisions set forth in Sections 4.2 and 4.3 of Condition D.

C. CONDITION D: ADMINISTRATIVE STRUCTURE

NOTE: The following italicized text is the original version of the Commission's 1991 permit Condition D. The non-italicized text is the language added or revised by the 1997 amendment. Strikeout and underline reflect Commission changes to staff-recommended conditions of March 21, 1997. ~~The staff is recommending that the wording remain in full force and effect and the permittee's August 1996 amendment be rejected. The staff is recommending that~~ In its April 9, 1997 action, the Commission revised Condition D ~~be amended~~ to add an optional funding option package (D.4.0) to fully satisfy the permittee's responsibilities.

1.0 ADMINISTRATION[5]

Personnel with appropriate scientific or technical training and skills will, under the direction of the Executive Director, oversee the mitigation and monitoring functions identified and required by conditions II-A through C. The Executive Director will retain approximately two scientists and one administrative support staff to perform this function.

This technical staff will oversee the preconstruction and post-construction site assessments, mitigation project design and implementation (conducted by permittee), and monitoring activities (including plan preparation); the field work will be done by contractors under the Executive Director's direction. The contractors will be responsible for collecting the data, analyzing and interpreting it, and reporting to the Executive Director.

The Executive Director shall convene a scientific advisory panel to provide the Executive Director with scientific advice on the design, implementation and monitoring of the wetland restoration and artificial reef. The panel shall consist of recognized scientists, including a marine biologist, an ecologist, a statistician and a physical scientist.

2.0 BUDGET AND WORK PROGRAM

The funding necessary for the Commission and the Executive Director to perform their responsibilities pursuant to these conditions will be provided by the permittee in a form and manner determined by the Executive Director to be consistent with requirements of State law, and which will ensure efficiency and minimize total costs to the permittee. The amount of funding will be determined by the Commission on a biennial basis and will be based on a proposed budget and work program, which will be prepared by the Executive Director in consultation with the permittee, and reviewed and approved by the Commission. If the permittee and the Executive Director cannot agree on the budget or work program, the disagreement will be submitted to the Commission for resolution.

[5] Text that is the same text as the 1991 Conditions is in italics.

The budget to be funded by the permittee will be for the purpose of reasonable and necessary costs to retain personnel with appropriate scientific or technical training and skills needed to assist the Commission and the Executive Director in carrying out the mitigation and lost resource compensation conditions (II-A through C) approved as part of this permit action. In addition, reasonable funding will be included in this budget for necessary support personnel, equipment, overhead, consultants, the retention of contractors needed to conduct identified studies, and to defray the costs of members of any scientific advisory panel(s) convened by the Executive Director for the purpose of implementing these conditions.

Costs for participation on any advisory panel shall be limited to travel, per diem, meeting time and reasonable preparation time and shall only be paid to the extent the participant is not otherwise entitled to reimbursement for such participation and preparation. Total costs for such advisory panel shall not exceed $100,000 per year adjusted annually by any increase in the consumer price index applicable to California.

The work program will include:

a. *A description of the studies to be conducted over the subsequent two year period, including the number and distribution of sampling stations and samples per station, methodology and statistical analysis (including the standard of comparison to be used in comparing the mitigation projects to the reference sites.)*

b. *A description of the status of the mitigation projects, and a summary of the results of the monitoring studies to that point.*

c. *A description of the performance standards that have been met, and those that have yet to be achieved.*

d. *A description of remedial measures or other necessary site interventions.*

e. *A description of staffing and contracting requirements.*

f. *A description of the Scientific Advisory Panel's role and time requirements in the two year period.*

The Executive Director may amend the work program at any time, subject to appeal to the Commission.

3.0 ANNUAL REVIEW

A duly noticed public workshop will be convened and conducted by the Executive Director or the Commission each year to review the status of the mitigation projects. The meeting will be attended by the contractors who are conducting the monitoring, appropriate members of the Scientific Advisory Panel, the permittee, Commission staff,

representatives of the resource agencies (CDFG, NMFS, USFWS), and the public. Commission staff and the contractors will give presentations on the previous year's activities, overall status of the mitigation projects, identify problems and make recommendations for solving them, and review the next year's program. The permittee shall report on the status of the behavioral barrier devices.

The public review will include discussions on whether the artificial reef and wetland mitigation projects have met the performance standards, identified problems, and recommendations relative to corrective measures necessary to meet the performance standards. The Executive Director will utilize information presented at the annual public review, as well as any other relevant information, to determine whether any or all of the performance standards have been met, whether revisions to the standards are necessary, and whether remediation is required. Major revisions shall be subject to the Commission's review and approval.

The mitigation projects will be successful when all performance standards have been met each year for a three-year period. The Executive Director shall report to the Commission upon determining that all of the performance standards have been met for three years and that the project is deemed successful. If the Commission determines that the performance standards have been met and the project is successful, the monitoring program will be scaled down, as recommended by the Executive Director and approved by the Commission. A public review shall thereafter occur every five years, or sooner if called for by the Executive Director. The work program shall reflect the lower level of monitoring required. If subsequent monitoring shows that a standard is no longer being met, monitoring may be increased to previous levels, as determined necessary by the Executive Director.

The Executive Director may make a determination on the success or failure to meet the performance standards or necessary remediation and related monitoring at any time, not just at the time of the annual public review.

4.0 FUNDING OPTION PACKAGE

NOTE: The Commission imposed a new funding requirement that the permittee pay $3.6 million toward the OREHP mariculture/fish hatchery program, as described in Condition C, Section 3.0. The $3.6 million requirement is in addition to the costs in the funding option for the mitigation requirements of Conditions A, C, and D. The $3.6 million requirement is not optional and is therefore not included here in the funding option package. Refer to Appendix F for a full summary of the costs for SONGS mitigation.

The permittee has the option of satisfying the requirements of Condition A (wetland mitigation), Sections 1 and 2 of Condition C (kelp reef mitigation) and Sections 1.0 through

3.0 of Condition D by paying a total of ~~$106.51~~ $114.05 million plus interest in accordance with the provisions set forth in Sections 4.0 through 4.3 of Condition D. To elect this option, the permittee must, within ~~30~~ 60 days of the ~~effective date~~ Commission's approval of this permit amendment (CDP No. 6-81-330-A), and no later than June 8, 1997, inform the Executive Director in writing of the permittee's election of this option. The funding option must be elected in its entirety. The permittee's election of the funding option is irrevocable.

Following the permittee's election of this funding option, the Executive Director will develop one or more Implementing Proposals that specify:

(1) the Implementing Entities that will establish the Wetland Restoration Implementation Fund, the Kelp Reef Mitigation Implementation Fund, and the Independent Monitoring and Technical Oversight Fund (hereafter referred to as "the Funds"), which are described more fully in Sections 4.1 through 4.3 below, and

(~~3~~2) the processes for expenditure of monies in the Funds.

The Implementing Proposals shall reflect the purposes of the Funds and deadlines for permittee's payment into the Funds as set forth in Sections 4.1 through 4.3 below, and shall stipulate that the Funds will be used to implement the requirements of Condition A, Sections 1 and 2 of Condition C, and Sections 1.0 through 3.0 of Condition D.

Within six months of the permittee's election of this funding option, the Executive Director shall present the Implementing Proposals to the Commission for review and approval. Within 30 days of the Commission's approval of Implementing Proposals, the permittee shall enter into agreement(s) with the Implementing Entities providing for payment in accordance with Sections 4.1 through 4.3. Such agreements shall be subject to review and approval of the Executive Director. At the same time the permittee shall enter into one or more irrevocable letters of credit on terms acceptable to the Executive Director. The letter(s) of credit shall name as beneficiaries the Implementing Entities and shall be in the total amount of ~~$106.51~~ $114.05 million.

The permittee shall pay monies into the Funds in accordance with the deadlines set forth in Sections 4.1 through 4.3 below. The permittee must pay not only the ~~$106.51~~ $114.05 million but all interest that would have accrued had the total amount been paid on the date the permittee elects the option. The interest shall be calculated using rates equivalent to the Federal Reserve Bank rate for 6-month U.S. Government Securities Treasury bills (discount rate), and shall be adjusted quarterly in accordance with the current rate. Interest shall be compounded monthly. Thus, each payment of a portion of the ~~$106.51~~ $114.05 million shall include interest on that amount.

If the permittee fails to make a specified payment into a designated Fund by the applicable deadline, the permittee shall transfer into that Fund the entire remaining unpaid amount designated for that Fund. The permittee shall pay such entire amount within 10 days after the applicable deadline. The payment shall include the principal and all interest accrued as of that date on the remaining unpaid amount designated for that Fund.

The permittee may satisfy this funding option for Condition A, Sections 1 and 2 of Condition C, and Sections 1.0 through 3.0 of Condition D in full at any time by depositing into the Funds the entire amount (~~$106.51~~ $114.05 million or the amount remaining after payments made in accordance with Sections 4.1 through 4.3 below) plus interest accrued as of that date. Monies shall be allocated to the Funds in accordance with Sections 4.1 through 4.3 below.

At least sixty (60) days prior to cessation of operation (other than temporary cessation for repair or maintenance) or transfer of ownership, management or operation of SONGS Units 2 and 3, or abandonment of either or both units, the permittee shall deposit into the Funds the entire remaining balance of principal plus interest accrued on the remaining amount as of that date. Monies shall be allocated to the Funds in accordance with Sections 4.1 through 4.3 below.

4.1 Wetland Restoration Implementation Fund

In accordance with Section 4.0 above, the permittee shall pay monies to a Wetland Restoration Implementation Fund (hereinafter referred to as "the Wetland Fund") established by an Implementing Entity pursuant to the Implementing Proposal. The purpose of the Wetland Fund will be to enable the Implementing Entity to implement the requirements of Condition A. The Wetland Fund shall cover the costs of implementation, which include, but are not limited to: project design, environmental review, and permitting costs, construction costs, including construction management and contingencies, project management and administrative costs, maintenance costs, and remediation costs. The permittee shall pay $55.63 million into the Wetland Fund in accordance with Provision 4.0 above and in accordance with the following deadlines:

(1) Within thirty (30) days after the permittee receives written notice of the establishment of the Wetland Fund, the permittee shall pay $9.92 million plus interest accrued on that amount.

(2) Within thirty (30) days after the permittee receives written notice from the Implementing Entity that a request for construction bids has been scheduled, the permittee shall pay $32.22 million plus interest accrued on that amount.

(3) Within thirty (30) days after the permittee receives written notice from the Implementing Entity that construction has been completed, or by December 30, 2003, which ever occurs first, the permittee shall pay $13.49 million plus interest accrued on that amount.

When construction has been completed, those monies (principal and interest) allocated for construction costs remaining in the Wetland Fund, if any, shall be transferred to the Southern California Coastal Wetlands Clearinghouse, the State Coastal Conservancy or other entity designated by the Executive Director and approved by the Commission for the sole purpose of funding additional wetland restorations within the Southern California Bight. At the end of the remediation period all unspent monies (principal and interest) remaining in the Wetland Fund shall be returned to the permittee.

4.2 Kelp Reef Mitigation Implementation Fund

In accordance with Section 4.0 above, the permittee shall pay monies to a Kelp Reef Mitigation Implementation Fund (hereinafter referred to as "the Reef Fund") established by the Implementing Entity pursuant to an Implementing Proposal. The purpose of the Reef Fund will be to enable the Implementing Entity to implement the requirements of Section 1 (experimental reef) and Section 2 (mitigation reef) of Condition C. The Reef Fund shall cover the costs of implementing the experimental and mitigation kelp reefs. For the experimental reef these costs include but are not limited to: preconstruction site surveys, environmental review and permitting costs, and construction costs, including contractor mobilization (start-up) costs, contingencies and post-construction surveys. For the mitigation reef, implementing costs include but are not limited to: preconstruction site surveys, project design, environmental review, and permitting costs, construction costs, including contractor mobilization (start-up) costs and contingencies, construction and post-construction monitoring survey costs, project management and administration costs, and remediation costs.

The permittee shall pay ~~$36.3~~ $43.84 million into the Reef Fund in accordance with Section 4.0 above and in accordance with the following deadlines:

(1) Within thirty (30) days after the permittee receives written notice of the establishment of the Reef Fund, the permittee shall pay $2.7 million plus interest accrued on that amount.

(2) Within thirty (30) days after the permittee receives written notice from the ~~Implementing Entity~~ Executive Director that ~~a request for construction bids has been released~~ independent monitoring of the experimental reef is complete, or by December 30, 2003, whichever occurs first, the permittee shall pay ~~$33.6~~ $41.14 million plus interest accrued on that amount.

When construction of the mitigation reef has been completed, those monies (principal and interest) allocated for construction costs remaining in the Reef Fund, if any, shall be transferred to the Department of Fish and Game or other entity designated by the Executive Director and approved by the Commission for the sole purpose of funding additional kelp reef creation. At the end of the remediation period all unspent monies (principal and interest) remaining in the Reef Fund shall be returned to the permittee.

4.3 Independent Monitoring and Technical Oversight Fund

In accordance with Section 4.0 above, the permittee shall pay monies to the Independent Monitoring and Technical Oversight Fund (hereinafter referred to as "the Monitoring and Oversight Fund") established by the Implementing Entity pursuant to an Implementing Proposal. The purpose of the Monitoring and Oversight Fund will be to enable the Implementing Entity to implement the requirements of Sections 1.0 through 3.0 of Condition D. The Monitoring and Oversight Fund shall cover the costs for: (1) independent monitoring of the mitigation projects as required by Conditions A and C, and (2) the Executive Director to retain persons with appropriate scientific or technical skills to assist the Commission's technical oversight of implementation, monitoring, and remediation of the mitigation projects as required by Condition A, Condition C, and Sections 1.0 through 3.0 of Condition D. Commission oversight costs include, but are not limited to the following: (1) review and evaluation of pre- and post-construction site assessment, project design, and project implementation, (2) development of monitoring plans, (3) oversight of monitoring activities, (4) evaluation of monitoring data for determining project compliance, (5) recommendations for remediation, if necessary, and (6) oversight of remediation. Commission oversight costs also include consultation with appropriate resources agencies and scientific experts, and the planning of and participation in annual public reviews on the status of the mitigation projects. Independent monitoring costs include costs for independent contractors to: (1) collect and manage the monitoring data, (2) transfer the data to the Commission, and (3) participate in annual public reviews on the status of the mitigation monitoring.

The permittee shall pay $14.58 million into the Monitoring and Oversight Fund in accordance with Section 4.0 above and in accordance with the following deadlines:

(1) Within thirty (30) days after the permittee receives written notice of the establishment of the Monitoring and Oversight Fund, the permittee shall pay $3.58 million plus interest accrued on that amount.

(2) On December 30 after the first payment, and on every December 30 for ~~four~~ three years thereafter, the permittee shall pay $2.75 million plus interest accrued as of the date of the payment.

At the end of the remediation period, any monies (principal and interest) remaining in the Monitoring and Oversight Fund shall be returned to the permittee.

IV. FINDINGS AND DECLARATIONS IN SUPPORT OF AMENDMENTS TO CONDITIONS

NOTE: Strikeout and underline reflect Commission changes to staff-recommended findings of March 21, 1997.

A. BACKGROUND ON COASTAL COMMISSION ACTIONS RELATING TO THE SONGS

This section provides an overview of: (1) the project (i.e., the San Onofre Nuclear Generating Station (SONGS)); (2) the affected habitat and resources; and (3) the major events and decisions affecting SONGS, which involved the California Coastal Commission or its predecessor the California Coastal Zone Conservation Commission (CCZCC). For a more complete description of the background on SONGS see the findings for permit 6-81-330 (formerly 183-73).

1.0 THE PROJECT

The San Onofre Nuclear Generating Station (SONGS) is located in north San Diego County (see Exhibit 1). SONGS Unit 1, which generated up to 436 megawatts of electric power, began operation in 1968 and stopped operating in the early 1990s. Construction of SONGS Units 2 and 3 began in 1974 and was completed in 1981. Operation of Units 2 and 3 began in 1983. Each unit generates up to 1,100 MW of electric power, and draws in seawater at a rate of 830,000 gallons per minute from an intake pipe 18 feet in diameter, originating 3,400 feet offshore. The plant draws in almost 700 billion gallons per year.

The discharge pipe for Unit 2 terminates 8,500 feet offshore, while the discharge pipe for Unit 3 terminates 6,150 feet offshore (see Exhibit 2).The last 2,500 feet of the discharge pipes for Units 2 and 3 each consist of a multiport diffuser that rapidly mixes the cooling water with the surrounding water. The diffusers contain 63 discharge ports angled offshore that increase the velocity of the discharge. The discharge water is approximately 19°F warmer than the intake water temperature. To cool the discharge water, the diffusers draw in ambient seawater at a rate about ten times the discharge flow and mix it with the discharge water. The surrounding water is swept up along with sediments and organisms and transported offshore at various distances, depending on the prevailing currents.

2.0 PERMIT HISTORY

Southern California Edison (SCE) and San Diego Gas and Electric (SDG&E) submitted a coastal development permit application to construct Units 2 and 3 of SONGS in 1973. On December 5, 1973, the California Coastal Zone Conservation Commission (CCZCC) denied the SONGS permit application primarily due to the anticipated adverse impacts of SONGS to the marine environment. SCE and SDG&E filed suit and the Commission stipulated in court to accept the permit on remand, thereby scheduling a new vote on the project.[6]

On February 28, 1974, the CCZCC approved a permit for the construction of SONGS Units 2 and 3. At that time, there was considerable debate concerning the potential adverse effects SONGS would have on the marine environment. In public hearings, SCE scientists testified that the environmental effects of the new generating units would be minimal. Opponents testified to the contrary. Little reliable scientific information was then available. The probability of any Commission decision resulting in additional litigation was high, and SCE and SDG&E contended that the costs of delay were substantial.

In this context the CCZCC approved coastal permit 183-73 to construct Units 2 and 3 of SONGS, subject to special conditions. The permit: (1) established a three-member independent Marine Review Committee (MRC) comprised of individuals appointed by the Commission, the permittees, and an environmental coalition that had opposed the project; (2) authorized the Commission to require the permittees to make future changes in the SONGS cooling system (as extensive as the installation of cooling towers) to address adverse impacts to the marine environment identified by the MRC; and (3) required the Commission to forward recommendations to the San Diego Regional Water Quality Control Board and the State Water Resources Control Board based on the findings of the MRC regarding water quality and Federal Clean Water Act National Pollutant Discharge Elimination System (NPDES) permit monitoring.

2.1 Mandate to the Marine Review Committee

The CCZCC directed the MRC, formed through Condition One, to carry out a comprehensive and continuing study of the marine environment offshore from SONGS to predict, and later to measure, the effects of SONGS Units 2 and 3 on the marine environment. Coastal development permit 183-73 specifically directed the MRC to: (1) determine the effects of the cooling system of the SONGS Unit 1 on the adjacent marine ecosystem; (2) predict the effects of SONGS Units 2 and 3; and (3) monitor the effects of Units 2 and 3. The aim was to obtain information that would allow the CCZCC to decide whether or not changes in the cooling system should be required to prevent or

[6] The court remanded the decision on a technicality, finding that the Commission had exceeded its authority by basing its decision in part on nuclear safety considerations.

reduce any significant adverse impacts on the marine environment caused by operation of Units 2 and 3.

In November 1979, after a public hearing to review the status of the MRC studies, the Commission recognized that some effects might be mitigated without requiring extremely expensive changes in the cooling system. The Commission found that,

> ...Changes such as requiring cooling towers, extended diffusers or single point discharges could cost hundreds of millions of dollars and result in unit shutdown for a period of time. ...The Commission also recognizes that operational changes or mitigation measures might adequately compensate for any marine life damages resulting from the operation of Units 2 and 3. The Commission, therefore, requests the MRC to study the feasibility and effects of selected promising mitigation measures, including construction of an artificial reef, as suggested by Southern California Edison. The MRC should recommend what measures might be taken to assure there would be no net adverse effect on the marine environment from operation of SONGS Units 2 and 3.

2.2 MRC Submits Results and Recommendations for Mitigation

The MRC submitted its Final Report to the Commission in August 1989. The report concluded that the operation of SONGS was causing substantial adverse effects to the organisms in the San Onofre kelp bed, the fish stocks in the Southern California Bight, and to local midwater fish populations, kelp bed fish, kelp, and kelp bed biota.[7] These effects are summarized below.

San Onofre Kelp Bed:

- The discharge plume from SONGS Units 2 and 3 results in a substantial reduction in the abundance and density of kelp plants.
- The discharge plume results in a substantial reduction in the abundance and biomass (total weight) of most of the kelp bed fish species that the MRC studied.
- The discharge plume results in a substantial reduction in the abundance of large invertebrates inhabiting the kelp reef.

Fish stocks in the Southern California Bight:

- Intake loss of immature fish is projected to cause substantial reductions in Bight-wide adult fish populations.

[7] Marine Review Committee. 1989. *Final Report of the Marine Review Committee to the California Coastal Commission*. MRC Document No. 89-02.

Local midwater fish populations:

- Substantial reductions in local abundance of midwater fish populations were measured out to a distance of 3 km from SONGS.

The MRC recommended options for mitigation based on its analysis of the effects of SONGS on the marine environment. The MRC considered an array of techniques to mitigate for the adverse impacts of operating SONGS including: (1) creating a kelp bed artificial reef, (2) upgrading the existing fish exclusion/return systems at SONGS, and (3) restoration of a wetland.

Although the MRC studies were comprehensive and used state-of-the-art techniques, there is always some measure of uncertainty in quantifying the extent of adverse impacts where impacts are on-going and far reaching, and where environmental conditions are dynamic. The MRC could have, at considerable additional cost and time, continued its studies to more definitively determine the extent of SONGS' impacts on the marine environment. However, the Commission, **with the strong urging of the permittee**, terminated the field work of the MRC in 1988 and specified the mitigation measures required to offset the adverse impacts of SONGS. The MRC recommendations provided the basis for the mitigation measures required by the Commission.

2.3 MRC Costs in Perspective

In its summary of costs[8] spent to date on mitigation for SONGS Units 2 and 3, the permittee includes the cost ($48 million) of funding the MRC's work. The Commission recognizes that the MRC costs were substantial, but finds these costs are separate and distinct from the costs of mitigating the adverse impacts of SONGS. The MRC costs represented the cost of determining the impacts of SONGS Units 2 and 3 after construction. The MRC's results were used by the Commission to determine necessary and appropriate mitigation. The Commission has never considered the work completed by the MRC as compensatory mitigation. Moreover, the MRC's undertaking enabled the permittee to proceed with the construction and operation of SONGS and to thus generate substantial profits for shareholders, for more than a decade before any mitigation requirement was invoked.

The costs of the MRC were justified based on the circumstances surrounding the application to construct SONGS Units 2 and 3. When the application came before the Commission, there was a great deal of controversy surrounding the question of whether the once-through ocean water cooling system should be permitted at all, given expected

[8] Volume I, Section G, page 6, Table 1. In: *Submittal to Amend and Fulfill Certain Conditions of Coastal Development Permit No. 6-81-330 (SONGS Units 2 & 3).* August 16, 1996 Submitted by Southern California Edison.

adverse impacts to the marine environment. The MRC was conceived as a way of dealing with this conflict, and as a way to avoid costly and time-consuming project delays and litigation.

In a 1973 letter to the Executive Director of the CCZCC, the permittee estimated that delays in construction of the power plant would cost the utility $1.5 million **per week**. If, instead of setting up the MRC, the Commission had required the permittee to avoid adverse impacts by constructing cooling towers, the permittee's costs would have been increased by an estimated $500 million to $2 billion.[9]

Thus, given its comprehensive mandate, and given the financial benefit to the permittee of proceeding with the SONGS project while marine environmental impacts were studied, the MRC costs were reasonable. The MRC evaluated the effect of SONGS on all major components of the marine environment at an average annual cost of $3 million. To put this cost in perspective, Southern California Edison currently spends $12 million per year voluntarily on contributions to the Electric Power Research Institute, an industry-funded research institute charged with advancing the interests of the utility industry. (R. Kinosian, personal communication).[10]

2.4 Use of the MRC Results and Recommendations

Following issuance of the MRC's Final Report in 1989, the Commission staff worked extensively with the MRC scientists, the permittee, environmental groups, fish and wildlife agencies, the Coastal Conservancy, the San Diego Regional Water Quality Control Board, the State Water Resources Control Board, wetland and kelp scientists, and others to develop a mitigation package for recommendation to the Commission. The goal of the staff was to develop a set of findings and conditions for the Commission's consideration that followed the MRC's recommendations and addressed existing Coastal Commission and wildlife agencies practices and policies. The permittee agreed that the mitigation options recommended by the MRC and adopted by the Commission were the most cost-effective means of dealing with the impacts reported by the MRC.[11]

2.5 1991 Coastal Commission Hearing

The staff presented its recommended mitigation package to the Commission at a public hearing on July 16, 1991. The Commission concluded that a compensatory mitigation

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[9] Ambrose R.F. 1990. *Technical Report to the California Coastal Commission: H. Mitigation.* Marine Review Committee, Inc.

[10] Robert Kinosian. California Public Utilities Commission, Division of Ratepayer Advocates. Personal communication September 10, 1996.

[11] Permittee's comments on CCC Staff Recommendation to further condition Permit No. 183-73, July 10, 1991.

program was the most cost-effective means of dealing with the adverse impacts caused by operation of SONGS Units 2 and 3 because costs borne by the permittee would be lower and, unlike the costlier prevention options considered but rejected, compensatory mitigation would not interfere with plant operations or reduce plant efficiency. The Commission therefore further conditioned permit 6-81-330 (formerly 183-73) to require implementation of the following mitigation program elements:

- creation or substantial restoration of at least 150 acres of Southern California wetlands, as compensatory mitigation for Bight-wide fish losses;
- installation of fish behavioral barrier devices at the power plant as avoidance mitigation for losses of local midwater fish; and
- construction of a 300-acre artificial reef, as compensatory mitigation for adverse impacts to the San Onofre Kelp community.

The permit conditions adopted by the Commission also required the permittee to provide the funds necessary to implement a specific administrative structure, which includes Commission staff oversight and independent monitoring of the wetland and artificial reef mitigation elements. The permit conditions require program oversight and monitoring to be conducted by a small mitigation monitoring program team and necessary scientific contractors under the direction of the Commission's Executive Director. This administrative structure was included because of the uncertainties associated with the use of compensatory mitigation to fully offset the adverse impacts of SONGS. The Commission found that the required administrative structure "addresses this uncertainty by providing information on the success of mitigation projects, and by providing a mechanism for 'adaptive management' of the created resource."

In adopting this mitigation package the Commission found:

> The adopted conditions which set up a mitigation, monitoring, and remediation program is viewed as a minimum package. The Commission believes that the only way that Edison should be allowed to mitigate impacts rather than make extensive SONGS cooling system and operational changes to prevent impacts is through the fully adopted mitigation package... A lesser mitigation package would not fully address the impacts caused by SONGS and would not be in compliance with the coastal permit conditions. (July 1991 adopted Commission findings.)

The Commission then directed the staff to consider the need for additional mitigation, identifying specifically that consideration be given to a fish hatchery program. On March 23, 1993, the Commission added a requirement for the permittee to partially fund ($1.2 million) construction of an experimental white seabass hatchery. Due to its experimental nature, the Commission did not assign mitigation credit to this requirement.

2.6 NPDES Compliance and Earth Island Institute Lawsuit Settlement

In a separate action, the San Diego Regional Water Quality Control Board, which issues and administers the Federal Clean Water Act National Pollutant Discharge Elimination System (NPDES) permit for the SONGS, began proceedings to review the MRC's 1989 findings that the SONGS might not be in compliance with the NPDES permit conditions. Earth Island Institute intervened in these proceedings to encourage the Regional Board to take enforcement action against the permittee. Earth Island Institute also filed action in Federal District Court, alleging violations of the Clean Water Act as a result of SONGS operations. The Regional Board held a hearing in October 1991, after the Coastal Commission had acted to further condition permit 6-81-330.

In early 1992 the Board concluded that the evidence did not clearly indicate any NPDES permit violations and thus terminated the proceeding. Earth Island subsequently filed Petitions for Review with the State Board and prepared its case for trial. In June 1993, before the case went to trial, the permittee settled the matter with the Earth Island Institute. The resultant settlement agreement, approved by the District Court, includes the following obligations agreed to by the SONGS' owners:

- restoration of wetland acreage in addition to that required by the Coastal Commission near or adjacent to the San Dieguito wetlands project;
- funding for wetlands restoration research; and
- inclusion of a Marine Science Education Center and ongoing education program targeted for disadvantaged youths at SCE's existing marine laboratory at Redondo Generating Station.

2.7 Termination of the MRC

Though the MRC's field studies terminated in 1988, and its final report was published in 1989, the Commission continued the existence of the MRC until 1993 to assess outstanding issues pursuant to the RWQCB's NPDES compliance hearings and to provide public testimony at a series of hearings regarding the Earth Island Institute's federal Clean Water Act lawsuit against the permittee.

On December 15, 1993, the Commission adopted the following resolution to authorize termination of the MRC:

> The Marine Review Committee for the San Onofre Nuclear Generating Station has completely and fully accomplished the mandate given to it under Permit No. 183-73 in an admirable and responsible manner. Accordingly, the California Coastal Commission (Coastal Commission) hereby authorizes the Marine Review Committee to terminate its existence. Although the Marine Review Committee will

no longer exist as an entity, the Coastal Commission will maintain the ability to consult with its former members, consultants and staff to seek clarification or interpretation of any of its findings. Southern California Edison Company (Edison) shall fund such consultation. Should Edison propose a modification to Permit No. 183-73, Edison shall also fund the Coastal Commission's consultation with technical experts the Commission believes is necessary to evaluate such a proposal.

2.8 Implementation of the Adopted Mitigation Conditions

From 1992 to 1995 Commission staff worked with the permittee to implement the mitigation conditions adopted by the Commission and agreed to by the permittee. Initially, staff efforts focused on implementation of Condition D, Administrative Structure, by establishing the mitigation monitoring program team and establishing various advisory panels such as the Interagency Wetland Advisory Panel (IWAP).

During this time, staff also worked intensively with the permittee during the site selection processes for both the wetland mitigation and artificial reef projects. Staff attended numerous permittee-sponsored meetings to discuss design plans for the mitigation projects. Over time, however, much of the discussion initiated by the permittee began to focus on permit condition interpretation rather than condition implementation. As a result, the staff was increasingly re-directed to the review of increasing amounts of technical information concerning the permittee's changing interpretations of its permit obligations.

By 1994, implementation of the wetland and artificial reef conditions stalled. With the exception of Conditions B (behavioral barriers to repel fish and thereby reduce midwater fish impingement losses) and F (contribution of $1.2 million for partial cost of the construction of a marine fish hatchery), none of the mitigation required in the 1991 permit had entered the implementation phase by 1995.

2.9 The 1995 Amendment Request

On September 11, 1995, the permittee submitted a request to amend certain conditions of Permit 6-81-330. This request proposed to amend four of the six conditions agreed to in the 1991 permit for SONGS. The table below shows how some of the proposed amendments would have changed the original 1991 permit conditions.

Table 22: Comparison of 1995 Amendment Requests with the 1991 Permit

Conditions in the 1991 SONGS Permit	Permittee's proposed 1995 amendments (not accepted for filing)
Condition A: Create or substantially restore 150 acres of coastal wetland habitat. Independently monitor to evaluate success and need for remediation for full operating life of SONGS (expected to be approximately 30 years).	Create or substantially restore approximately 65 acres at San Dieguito Lagoon. Remaining mitigation obligation (i.e., approximately 85 acres), provided through enhancement (e.g., maintenance of the lagoon inlet). Delete or change several performance standards, objectives, and design criteria. Permittee monitors at various times to evaluate success and need for remediation over a period of 10 years .
Condition B: Install fish behavioral barrier devices within the power plant with effectiveness and retention determined by the Executive Director.	Install fish behavioral barrier devices within the power plant with the permittee having sole discretion over the determination of effectiveness and decisions regarding the retention of the devices.
Condition C: Construction of a 300 acre artificial reef. Independently monitor to evaluate success and need for remediation for full operating life of the SONGS.	Construct a 12-acre experimental reef, with the permittee's obligation terminated after 10 years of experimental evaluation. Deletion of all performance standards and of all obligations to ensure project success (remediation).
Condition D: Implementation of a specific administrative structure, which includes permit oversight by the Executive Director and the independent monitoring of the wetland and artificial reef mitigation elements.	Independent monitoring of the entire mitigation program with self monitoring.

The Executive Director's Determination:

The Commission's regulations (section 13166(a)(1)) provide that the Executive Director use the following standard to determine whether or not an application for an amendment to a previously approved coastal development permit shall be accepted for Coastal Commission review:

> An application for an amendment shall be rejected if, in the opinion of the executive director, the proposed amendment would lessen or avoid the intended effect of a partially approved or conditioned permit unless the applicant presents newly discovered material information, which he could not, with reasonable diligence, have discovered and produced before the permit was granted.

The Executive Director determined on the basis of these criteria, that the proposed amendment would drastically reduce the mitigation requirements of the permit. As the Commission had found these requirements to be the minimum necessary to address the adverse impacts of operating SONGS, the Executive Director concluded that the proposed

amendments would have lessened or avoided the intended effect of the Commission's decision.

The Executive Director's determination was not overturned by the Commission; thus all of the 1991 permit conditions remain in full force. While upholding the Executive Director's determination, the Commission also directed the staff to work with the permittee to develop a mutually acceptable amendment package for Commission consideration.

2.10 The 1996 Amendment Request

Since November 1995 and in accordance with the Commission's direction, the staff has worked intensively with the permittee to develop a mutually acceptable amendment package. Numerous meetings with the permittee, staff from the CDFG, USFWS, NMFS, and other agencies, and outside scientists have focused on the permittee's concerns. The permittee's contentions regarding difficulties in implementing the 1991 permit mitigation conditions, and the permittee's proposed amendments, have been broadly considered. Nevertheless, the permittee claims the staff has required numerous studies and technical meetings above and beyond what is required by the current permit. More accurately, the studies and meetings were made necessary by the permittee's own assertions regarding the implications of past studies and the impact assessments underlying the existing permit conditions. In an effort to resolve these matters:

- The staff has worked with the wetland resource agencies (CDFG, USFWS, NMFS, etc.) to try to meet the permittee's desire to satisfy some of the wetland mitigation obligation through partial credit for the enhancement of existing wetlands that will result from inlet maintenance. The 1991 permit calls for creation or substantial restoration of at least 150 acres of coastal wetland, and the maintenance of continuous tidal flushing. Thus, allowing satisfaction of the requirement to create or substantially restore 150 acres by enhancement activities (e.g., inlet maintenance at San Dieguito Lagoon) requires a permit amendment. Through this approach, the staff has offered to support the permittee in seeking Commission approval for an amendment to allow partial credit for inlet maintenance. In spite of this offer, the permittee's amendment requests full credit for enhancement of existing wetland by inlet maintenance.

- As a way to reach an agreement on the amount of partial credit for inlet maintenance at San Dieguito Lagoon, the staff and the permittee sought the advice and recommendations of the Interagency Wetland Advisory Panel (IWAP) (Exhibit 3). However, the permittee's mitigation plan for San Dieguito Lagoon has ignored the IWAP recommendations and requests substantially more credit for inlet maintenance than either the IWAP or staff have recommended.

- The staff has worked diligently with the permittee to develop a mutually acceptable design for the experimental artificial reef. This work has entailed meetings with Commission staff, the permittee, Department of Fish and Game staff, and potential construction contractors.

- Although the 1991 permit requires that the kelp mitigation reef be constructed of quarry rock, the permittee has expressed interest in using concrete because it is cheaper. The staff has agreed to consider the possible use of concrete as a construction material for the kelp mitigation reef. The staff suggested that concrete be incorporated into the design of the experimental kelp reef to determine whether it would be a suitable building material for the larger kelp mitigation reef. Use of concrete to construct the artificial reef requires a permit amendment. Through this compromise, the staff has agreed to support the permittee in seeking Commission approval for an amendment to allow for the use of concrete in construction of the artificial reef and thereby reduce mitigation costs.
- The staff has offered numerous compromises on the intensity and breadth of the required monitoring programs. The staff has also suggested numerous monitoring strategies that uphold the spirit and intent of the 1991 permit, but do so at a lower overall cost to the permittee.

2.11 Independent Review Panel for Kelp Studies

In addition to the above examples, the Commission staff has worked with the permittee to resolve concerns about the implications of further kelp studies conducted by the permittee.

The Commission's resolution authorizing the dissolution of the MRC (1993) states that if the permittee chooses to seek revisions to the mitigation requirements, the permittee must fund former MRC scientists to review any new data collected after the MRC studies if such data is the basis of the proposed amendment. In spite of this requirement, the permittee objected to the MRC scientists fully evaluating the new kelp data the permittee had collected post-MRC studies. The permittee offered an alternative that it believed was quicker and cost effective—establishment of a three-member scientific panel to review the permittee's kelp data.

The Commission staff believed that the MRC scientists were more qualified to evaluate the new data because of their in-depth understanding of the methods and analysis used on the existing data. Nevertheless, in the spirit of compromise and to move forward with the mitigation, the staff agreed to jointly select a three-member panel with the permittee and form the questions for the panel to consider.

The Independent Review Panel published its conclusions on June 26, 1996. The panel agreed with the permittee's qualitative conclusion that the impacts to the San Onofre Kelp Bed (SOK) were less than previously estimated but did not quantify the reduction.

2.12 Hearings in 1996

The permittee's pending application for the proposed amendments to CDP 6-81-330 was filed on September 17, 1996 and placed on the Commission's October 8, 1996 agenda. The Commission heard public testimony and continued the item to its November 13, 1996 hearing. At the November hearing, the San Dieguito River Park Joint Powers Authority (JPA) cited deficiencies in the permittee's proposed plan for San Dieguito Lagoon that invalidated agreements between the permittee and the JPA, thus nullifying the permittee's authorization to use key lands owned and managed by the JPA. As the permittee's resultant lack of authority to use these lands rendered many aspects of the proposed amendments and mitigation plans unworkable, the Commission staff recommendation was withdrawn and the staff made a verbal recommendation of denial. After a long public hearing, the Commission continued the matter, asking that a further hearing be held by the following February.

In the wake of the Commission's November, 1996 continuation, Commission staff requested that the permittee clarify whether its amendment application should now be revised to reflect any of the modified proposals put forth by the permittee at the previous hearings or whether staff should continue its review of the amendment based only on the permittee's August, 1996 submittal. (See letter dated January 29, 1997, Exhibit 8.) On February 21, 1997 Commission staff received a letter from the permittee dated February 14, 1997 (Exhibit 9). The letter did not provide the requested information and instead sought further postponements. Commission staff, mindful of the Commission's direction to ensure timely re-scheduling of this item, has therefore placed it on the Commission's April agenda. Staff has held numerous meetings and conference calls with the permittee, attended workshops and meetings on outstanding issues concerning the San Dieguito Lagoon Plan, and worked with numerous other interested parties to resolve concerns. Staff believes there is now adequate information for the Commission to consider this item.

3.0 SONGS OWNERS RATE SETTLEMENT WITH THE CALIFORNIA PUBLIC UTILITIES COMMISSION

3.1 SONGS Profits

SONGS Units 2 and 3 have been in operation since 1983 and 1984, respectively. During this time (through 1995), the CPUC advisory and compliance division has explained that the SONGS owners were regulated through traditional ratemaking procedures. Accordingly, the SONGS owners have received a roughly 10.5% average authorized rate of return on an average authorized rate base of at least $2 billion per year, yielding total

authorized shareholder profits of approximately **$3 billion** ($210 million per year for 14 years).[12]

Future profits from SONGS will be based in part on a new regulatory structure, in which the costs are divided into two categories: "Sunk Costs" and "Incremental Costs" (or ICIP — for Incremental Costs Incentive Pricing). Sunk costs include a utility's previous investment in a nuclear facility and incremental costs are the costs associated with current plant operations (operations and maintenance, fuel, property taxes, employee costs, marine mitigation program, other capital additions, etc.).

Revenues are recovered from two categories, ICIP and Sunk, in the following ways. The ICIP revenues are earned via a new incentive mechanism in which SONGS electricity is sold to ratepayers at a pre-set price of approximately 4 cents per kilowatt-hour. If the plant runs at a 78% efficiency rate and forecasted operating expenses are accurate, the plant breaks even on operating costs at this rate. Superior operating performance or reduced costs would result in increased shareholder profits from the ICIP category. The Sunk Cost revenues are earned by the accelerated depreciation recovery of $2.6 billion previously invested plus earnings at a 7.34% rate (a reduction from the previously authorized 9.8% rate of return, in exchange for the accelerated rate of sunk costs depreciation) annually on the undepreciated remainder.

The 8-year settlement time frame allows for an accelerated recovery of sunk costs; by the end of this period, all sunk costs will have been recovered. The total scheduled profits by Southern California Edison alone (a 75% owner of SONGS) on its sunk cost investment will equal roughly **$ .6 billion** during the period of 1996–2003. The SONGS owners can also increase profits by reducing costs in the ICIP category or by operating SONGS at a greater than 78% capacity, or both. In fact, the plant operated at 80% capacity in 1996 and expenses were somewhat lower than forecasted.[13]

The settlements affecting Southern California Edison's 75% ownership interest in SONGS were formalized as CPUC Decisions 96-01-011 on January 10, 1996 and 96-04-059 on April 10, 1996.

3.2 Ratepayers Pay for Marine Mitigation

The ICIP formula incorporates the permittee's full forecasted amount for outstanding SONGS marine mitigation, an amount forecasted by the permittee at approximately $106 million. [14] (An additional $5 million was forecasted by the permittee for post-2003

[12] We have made a conservative estimate because actual rate base figures are not available during this time. Actual returns can vary slightly from authorized values.
[13] Robert Kinosian, CPUC Office of Ratepayer Advocates, personal communication, March 20, 1997.
[14] Source: Table II-1 of Exhibit 39 to CPUC Decision 96-01-011, published January 10, 1996.

monitoring costs.) Through the ICIP formula, the ratepayers will pay for the full amount of mitigation costs forecasted by the permittee regardless of whether the money is actually spent by the SONGS owners for marine mitigation. Thus, any savings in SONGS mitigation costs, that is, expenditures less than the amount the permittee estimated to the CPUC would be necessary to comply with the permit, will **not** be returned to the ratepayers. The Commission notes that despite requests by the CPUC Division of Ratepayer Advocates (DRA), the settlement did not include any provision to return operating expense savings to the ratepayers. Any unspent monies will lead to increased shareholder profits (assuming that there is not a corresponding increase in other costs, in which case they would serve to offset these additional costs).

3.3 The Permittee's New Business Climate: Profit Incentive to Reduce Mitigation Costs

The changed business climate the permittee faces in light of the CPUC settlements changes the incentive for mitigation implementation by the permittee. There is now a clear incentive for the permittee to reduce its mitigation obligations: permittee shareholders will keep the unspent mitigation "costs" as profit or as offsets for other costs.

3.4 SONGS Mitigation Program is Not a Threat to Continued Plant Operations

The permittee contends that the CPUC settlement and SONGS profit disclosures are not relevant to the Commission's consideration of its permit amendment application. However, the Commission has directed staff to investigate this information due to widespread public interest in the subject and because the permittee has asserted previously that the required mitigation expense is so burdensome to ratepayers and to the owners of the SONGS that the mitigation costs might cause the permittee to close the plant. As explained above, the CPUC settlement authorizes the permittee to collect the permittee's full forecasted amount of mitigation costs from the ratepayers, even if the permittee reduces the actual expenditures for mitigation. As further explained above, the permittee appears able to generate continued profits on the operation of the SONGS and thus, continued successful plant operations appear to be unaffected by the mitigation requirements.

B. COASTAL ACT POLICIES AND PROVISIONS

The Commission finds, for the purpose of reviewing the proposed amendment, that applicable sections of the Coastal Act include:

Coastal Act Section 30230:

> Marine resources shall be maintained, enhanced, and where feasible, restored. Special protection shall be given to areas and species of special biological or

economic significance. Uses of the marine environment shall be carried out in a manner that will sustain the biological productivity of coastal waters and that will maintain healthy populations of all species of marine organisms adequate for long-term commercial, recreational, scientific, and educational purposes.

Coastal Act Section 30231:

The biological productivity and the quality of coastal waters, streams, wetlands, estuaries, and lakes appropriate to maintain optimum populations of marine organisms and for the protection of human health shall be maintained and, where feasible, restored through, among other means, minimizing adverse effects of waste water discharges and entrainment, controlling runoff, preventing depletion of ground water supplies and substantial interference with surface water flow, encouraging waste water reclamation, maintaining natural vegetation buffer areas that protect riparian habitats, and minimizing alteration of natural streams.

Coastal Act Section 30233:

Coastal Act Section 30233 states in pertinent part:

(a) The diking, filling, or dredging of open coastal waters, wetlands, estuaries, and lakes shall be permitted in accordance with other applicable provisions of this division, where there is no feasible less environmentally damaging alternative, and where feasible mitigation measures have been provided to minimize adverse environmental effects, and shall be limited to the following:

(1) New or expanded port, energy, and coastal-dependent industrial facilities, including commercial fishing facilities. ...

(7) Restoration purposes

Coastal Act Section 30240:

(a) Environmentally sensitive habitat areas shall be protected against any significant disruption of habitat values, and only uses dependent on those resources shall be allowed within those areas.

(b) Development in areas adjacent to environmentally sensitive habitat areas and parks and recreation areas shall be sited and designed to prevent impacts which would significantly degrade those areas, and shall be compatible with the continuance of those habitat and recreation areas.

Coastal Act Section 30107.5:

> "Environmentally sensitive area" means any area in which plant or animal life or their habitats are either rare or especially valuable because of their special nature or role in an ecosystem and which could be easily disturbed or degraded by human activities and developments.

Coastal Act Section 30108:

> "Feasible" means capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, and technological factors.

C. FINDINGS FOR AMENDMENTS TO CONDITIONS

In its 1991 adoption of conditions to the 1973 coastal development permit for SONGS Units 2 and 3, the Commission found the required compensatory mitigation, monitoring, and remediation program to be a **minimum package**. The Commission found that full implementation of the minimum package was the only way that the permittee could mitigate the adverse impacts other than through making extensive changes to the structure of SONGS.

The permittee proposed to amend three conditions of the existing permit. The permittee believes the amendments are necessary to reflect information obtained since adoption of the conditions in 1991, to clarify various provisions of the conditions, and to extend various missed deadlines. Amendments are proposed to: **Condition A**, the wetland mitigation condition; **Condition C**, the kelp reef mitigation condition; and **Condition D**, the administrative structure condition.[15]

D. FINDINGS FOR DENIAL OF AMENDMENTS OF CONDITION A: WETLAND MITIGATION

This section presents the Commission's findings in support of rejecting the permittee's proposed changes to Condition A and amending Condition A to: (1) reconfirm the Commission's approval of San Dieguito Lagoon as the site that meets the minimum standards and best meets the objectives of Condition A; (2) allow the permittee to receive partial substantial restoration/creation credit for enhancing existing tidal wetlands if the restoration is carried out at San Dieguito Lagoon; (3) extend the deadline of the

[15] No amendments to Condition B, Behavioral Barrier Mitigation; Condition E, MRC Data Maintenance; or Condition F, Hatchery Program were submitted by the permittee. Thus, these conditions are not discussed in this staff report, and still apply as originally described. A copy of the adopted text of Conditions B, E, and F appears in Appendix B.

submission of the preliminary plan from 9 months after approval of Condition A to 6 months after approval of this amendment (i.e., no later than October 9, 1997); and (4) add a funding option to the existing (1991) conditions. Condition A sets forth the requirement to substantially restore or create wetlands to mitigate the fish losses caused by SONGS Units 2 and 3.

1.0 PURPOSE OF CONDITION A

Complete findings for the purpose of Condition A are described in the findings for permit 6-81-330 (formerly 183-73) and incorporated here by reference. A summary of the key points of these findings is presented below.

The overall goal of the wetland mitigation program is to compensate for the Bight-wide losses of marine fish standing stocks that occur as a result of the operation of SONGS Units 2 and 3. Coastal Act Section 30230 states "[m]arine resources shall be maintained, enhanced, and where feasible, restored." The non-recirculating water system for cooling SONGS Units 2 and 3 causes substantial losses of marine fish for the duration of its operation. Construction of Units 2 and 3 was found to be consistent with the Coastal Act only if these significant adverse impacts to fish would be fully mitigated. Condition A sets forth a process for restoring or creating 150 acres of wetlands in order to mitigate this impact. Condition A contains requirements regarding site selection, mitigation plan development, plan implementation, and project monitoring, management, and remediation. This comprehensive process was required to ensure the wetland mitigation project would compensate for the fish losses for the duration of the operating life of SONGS.

The Commission selected the option of coastal wetland mitigation for several reasons. Coastal wetlands provide valuable habitat for fish, including some of the species affected by SONGS and other economically important species, such as California halibut. In addition, coastal wetland mitigation provides numerous other estuarine, marine and coastal resource benefits. Finally, coastal wetlands currently comprise a rare habitat type. Less than 25 percent of the original coastal wetland area remains in Southern California, and much of the remaining wetlands are degraded.

2.0 AMENDMENT OF CONDITION A PROPOSED BY THE PERMITTEE

The permittee is proposing more than 26 revisions to Condition A: Wetland Mitigation (see Appendix C for the permittee's complete amendment package). The significant proposed amendments fall into the following eight categories:

1. **Changes to permit deadlines** — extension of various deadlines that have not been met by the permittee;

2. **Additional mitigation at Ormond Beach wetland** — addition of a provision that allows the permittee to pay a maximum of $3 million to implement a plan for restoration of wetlands at Ormond Beach;

3. **Reduction of the wetland buffer requirements** — allow the upland buffer between a restored wetlands and existing development to be less than 100 feet;

4. **Independent monitoring** — elimination of the provision that the permittee fund monitoring conducted by an independent entity;

5. **Length of monitoring** — reduction of the duration of post-construction monitoring of the restored wetland from "the full operating life" of SONGS to 10 years;

6. **Length of maintenance and remediation** — reduction of the duration of remediation of the restored wetland from "the full operating life" of SONGS to 10 years;

7. **Changes to performance standards** — elimination of the requirement that success of the restored wetland be based upon a comparison to concurrently monitored reference sites that are relatively undisturbed, natural tidal wetlands within the Southern California Bight; and

8. **Addition of an uncontrollable forces clause** — negates the requirement to remediate should the mitigation fail to meet a performance standard due to an uncontrollable force, such as a major flood.

2.1 Changes to the Permit Deadlines

The permittee is proposing several extensions to condition compliance deadlines contained in Condition A. The new deadlines proposed by the permittee are not likely to be met and some have already passed. These deadlines may have been realistic when the permittee submitted the amendment package in August 1996. For example, the permittee proposed to change the deadline for submittal of a preliminary plan from April 1992 to January 1, 1997. However, since submittal of the amendment package, the owners and managers of the proposed mitigation site withdrew their support for the preliminary plan. Thus, the January 1, 1997 deadline has passed without the permittee's submittal of a feasible preliminary plan. All the other deadlines, which may have potentially been realistic if the January 1, 1997 deadline had been met, are now unrealistic and not likely to be met. Accordingly, the Commission finds it cannot amend Condition A to include the deadlines proposed by the permittee. ~~Further, the existing uncertainty surrounding the mitigation site makes it impossible to set realistic deadlines at this time. Thus, at this time, amendment of the deadlines set forth in Condition A would not make the development consistent with the Coastal Act.~~ The Commission finds that the deadline for submission of

the preliminary plan can be extended from 9 months after approval of Condition A (i.e., April 16, 1992) to 6 months after Commission approval of the amendment (i.e., October 9, 1997). The Commission finds that the delays in development of a workable plan for substantial restoration or creation of 150 acres at San Dieguito have been extensive and unwarranted. At this time, the Commission finds that the deadline can be extended only by the time reasonably necessary and only for the purpose of achieving permittee compliance without resorting to enforcement. However, no further delays beyond the new deadline will be allowed.

The Commission finds that 6 months is the length of time reasonably necessary for the permittee to submit a preliminary plan for the approved site that meets the requirements of Condition A. A preliminary plan can be developed from the alternative that has been prepared by Moffatt & Nichol. (*See* Wetland Restoration at San Dieguito Lagoon, Moffatt & Nichol Engineers, March 19, 1997). This alternative is a variation of a plan that the permittee had developed in 1994. Since the permittee has studied restoration at San Dieguito for many years, it should not be difficult to refine the Moffatt & Nichol alternative into a preliminary plan. Furthermore, the hydrological issues that require further study have been under analysis by the permittee and others since the Moffatt & Nichol alternative was distributed (March 28, 1997). The permittee previously estimated that it would take until the "latter half of April 1997" to complete its technical analysis of the alternative. (*See* Letter from Frank Melone, SCE to Councilman Harry Mathis (JPA), dated March 12, 1997). Thus, it is reasonable to expect that the permittee can complete and submit the Moffatt & Nichol alternative as a preliminary plan by October 9, 1997.

2.2 Mitigation at Ormond Beach Wetland

The permittee proposes to amend Condition A to allow the permittee to pay up to $3 million to the State Coastal Conservancy or the City of Oxnard to fund restoration of wetlands at Ormond Beach. Specifically, the proposed amendment provides that the permittee would establish an internal interest-bearing account. The permittee would then enter into an agreement with the Conservancy or the City, depending upon which entity agrees to implement the restoration project, for expenditure of money from the account. The permittee would release money from the account when requested and to the extent the request is consistent with the agreement.

The permittee proposed this amendment of Condition A in conjunction with its preliminary plan (submitted August 16, 1996) for restoration at San Dieguito Lagoon. The permittee asserts that the Condition A requirement for creation or substantial restoration of 150 acres of wetlands to mitigate for the adverse fish impacts of SONGS Units 2 and 3 will be entirely satisfied by implementation of its preliminary plan for restoration at San Dieguito. The permittee further asserts that the payment of up to $3 million for restoration at Ormond Beach is intended to resolve the dispute with the Commission staff

over whether the San Dieguito Lagoon preliminary plan describes a project that provides 150 acres of created or restored wetlands, as required by Condition A.

The Commission cannot accept the proposed amendments relating to Ormond Beach. The permittee has not demonstrated that restoration of Ormond Beach can occur consistent with the performance standards of Condition A. The permit describes the elements that a preliminary plan shall include (Section 1.2) and the permittee's plan does not meet these requirements. The Ormond Beach plan requires further description of the physical, biological, and hydrological conditions, an evaluation of the feasibility of the tidal connection, and identification of site opportunities and constraints. This information is required as part of the basis upon which the Commission would decide whether the Ormond Beach plan could satisfy a portion of the permittee's obligation under Condition A.

In addition, further study and environmental review of restoration at Ormond Beach could reveal that the restoration is infeasible or has adverse environmental impacts that cannot be mitigated. In that case, the restoration at Ormond Beach would not occur because the proposed amendment does not provide for alternative restoration should restoration at Ormond Beach prove infeasible.~~ Thus, although the Commission would consider reviewing Ormond Beach as a potential restoration site, it cannot at this time amend Condition A to require such restoration.~~ Further, the permittee proposed the Ormond Beach Restoration Plan to augment the San Dieguito Plan. In its amendment proposal, the permittee states that "to address staff concerns" regarding the number of acres credit at San Dieguito Lagoon "Edison proposes an amendment to augment the San Dieguito project by providing funds and property to allow the completion of the South Ormond Beach Wetlands Restoration and Management Plan." The permittee proposed $3 million as an amount that would achieve restoration of the number of acres necessary to reach 150 acres. However~~acres. Given the uncertainty surrounding the proposed project at San Dieguito Lagoon it is no longer clear how many acres of wetland will be restored at San Dieguito, if any. Thus, it would be premature to require restoration of Ormond Beach in the manner the permittee is presently proposing. Doing so could foreclose alternatives to what the permittee is proposing at Ormond Beach. Therefore the Commission cannot accept the proposed condition amendments relating to Ormond Beach. An amendment that fails to ensure mitigation of the adverse impacts of SONGS is inconsistent with the Coastal Act. The amendment also would be inconsistent with the California Environmental Quality Act (CEQA) since it would result in the Commission's having approved a development that has an adverse impact without having fully mitigated that impact.~~, the permittee's submitted plan for restoration at San Dieguito (*Preliminary Plan: San Dieguito Wetland Restoration Project* (1996)) cannot be implemented. The owners and managers of a majority of the affected property, the Joint Powers Authority (JPA), have refused to authorize use of their property for implementation of this plan. Therefore, whether the number of acres of substantially restored or created wetlands that will result from spending $3 million at Ormond Beach is sufficient to result in a 150-acre project is unclear. In

addition, the preliminary plan for restoration at Ormond Beach lacks the details necessary to evaluate whether restoration is feasible and whether $3 million is sufficient to accomplish whatever restoration is necessary.

Finally, it would be premature to amend Condition A to allow restoration at Ormond Beach because it appears that the full 150 acre restoration requirement can be met at San Dieguito. In 1992, the Commission approved San Dieguito as the site that best meets the minimum standards and objectives of Condition A. The Commission continues to find that San Dieguito is the site that best meets the minimum standards and objectives of Condition A. Furthermore, since 1992, the permittee and Commission staff have devoted substantial time to researching and studying the hydrology and biology of San Dieguito Lagoon. During this time the permittee engaged in significant dialogue with the local land owners, local governments, the Joint Powers Authority (which manages most of the land in the lagoon area), and the interested public. All of these entities and the Commission and the State Coastal Conservancy have invested a significant amount of time in considering, discussing and evaluating issues related to restoration at San Dieguito.

It appears that 150 acres of substantial restoration or creation can be achieved at San Dieguito. The JPA will allow use of their property for restoration by the permittee if the permittee develops a plan that will achieve major restoration at San Dieguito. The JPA found that the permittee's submitted plan, unlike several other alternative plans that the permittee had previously considered, did not achieve this goal.

The JPA and the Coastal Conservancy retained consultants Moffatt & Nichol to determine whether a plan for 150 acres would be feasible. Moffatt & Nichol concluded that an alternative to the permittee's plan can be developed and that there is one alternative that can result in the substantial restoration or creation of at least 109 acres, and the enhancement of 126 acres of existing tidal wetlands through permanent maintenance of a tidal opening. (*See* Wetland Restoration at San Dieguito Lagoon, Moffatt & Nichol Engineers, March 19, 1997 [16]). Based on the conclusion that permanent maintenance of a tidal opening at San Dieguito will enhance 126 acres of tidal wetlands in the long term and therefore this enhancement can be counted to a limited extent (up to 35 acres) toward the substantial restoration requirement (see discussion below), it appears the Moffatt & Nichol plan could result in the substantial restoration or creation of at least 144 acres of wetlands. Further, there is additional land surrounding the land affected by the Moffatt & Nichol plan that could also be restore to allow the full l50 acres to be restored at San Dieguito.

[16]. Moffatt & Nichol refined their March 19, 1997 plan on March 26, 1997. The refinements were minor adjustments to the cost estimates. The restoration elements were identical to the March 19 version. Since staff had already evaluated the March 19, 1997 version, this staff report refers to the March 19, 1997 version.

At this time, the Moffatt & Nichol plan requires additional information and refinement before it can be reviewed by the Commission as a preliminary plan. There are some outstanding issues regarding whether the plan is technologically feasible. The technological feasibility issues relate to hydrology concerns. In particular, studies are required to determine whether implementation of the project will result in substantially increased river scouring at the bridges and substantially increased river flooding of adjacent properties. Moffatt & Nichol believe that additional studies will demonstrate that their plan will not have these impacts or that slight modifications to their plan can avoid these impacts. Since San Dieguito is the only site that has been approved pursuant to the Condition A site selection process, and because the Commission continues to find that San Dieguito is the site that meets the minimum standards and best meets the objectives of Condition A, the restoration required by Condition A must be carried out at San Dieguito unless the additional studies demonstrate that it is technologically infeasible to carry out the full 150 acres at San Dieguito. In that event, the Commission could consider approving a second site, pursuant to the site selection process. The second site could be used to augment the restoration at San Dieguito to insure the permittee carries out the full 150 acres minimum requirement.

In light of the fact that the Commission has already determined that San Dieguito is the site that best meets the objectives of Condition A and in light of the significant amount of time and money that has been devoted to developing a restoration plan at San Dieguito, the Commission finds that it would be inconsistent with the Coastal Act to revise Condition A to allow the permittee to simply pay $3 million towards an uncertain restoration at Ormond Beach. Accordingly, Condition A must be amended to reflect that at this time San Dieguito is the only site that has been approved by the Commission pursuant to the site selection process and therefore, the preliminary and final plans must be for restoration at San Dieguito unless restoration at the site becomes infeasible for hydrology or other technological reasons. Should it become clear that the permittee needs to propose restoration at an additional site in order to reach a total of 150 acres (i.e., if the Moffatt & Nichol plan cannot be modified to enable the entire 150 acres to be carried out at San Dieguito), the permittee can at that time seek approval to do work at two sites and proceed under the site selection process in accordance with provisions 1.1 of Condition A.

2.2.1 Enhancement Credit to be Awarded for Inlet Maintenance

Since undergoing restoration in 1984, the inlet at San Dieguito Lagoon has been mostly open to tidal flows. However, there have been periods, e.g., 1989 through 1992, when it was mostly closed. When the inlet is open, as it is now, water quality in the lagoon is good and the lagoon supports many species of estuarine plants, invertebrates, fish and birds. However, closure of the inlet for extended periods (more than six months), can result in significant deterioration of water quality, fish kills, and degradation of existing tidal wetland vegetation. Therefore if the San Dieguito tidal inlet can be maintained open on a

permanent and continuous basis, the degradation of water quality, fish habitat, and wetland vegetation by reduced tidal flushing can be avoided.

All of the restoration plans for San Dieguito that have been considered by the permittee have included maintenance of the tidal inlet. This is because continuous tidal flow is necessary to achieve substantial restoration of existing non-tidal wetlands and to create new tidal wetlands at San Dieguito. The permittee asserts that by maintaining a permanent tidal inlet in order to achieve substantial restoration or creation of wetlands in the non-tidal areas, the permittee is also preventing the future degradation of existing tidal wetlands. The permittee asserts that it should be given credit for preventing the degradation of these existing wetlands, and that this prevention is substantial restoration.

Condition A requires the permittee to create or substantially restore at least 150 acres of wetlands. The enhancement of existing tidal wetlands by insuring that they are not degraded through future inlet closures is not creation or substantial restoration of wetlands. However, the Commission recognizes that the inlet at San Dieguito must be maintained to facilitate substantial restoration and creation of wetlands at San Dieguito. This permanent maintenance of the inlet will result in the permanent maintenance of the quality of the existing tidal wetlands. Thus, even though preventing degradation of the existing tidal wetlands will not "increase the aggregate acreage of wetland in the Southern California Bight" (Objective 1.4.j of Condition A), if inlet maintenance is part of a major restoration program at San Dieguito Lagoon, these tidal wetlands will be enhanced in the long-term and there will be improvement in water quality, fish habitat and wetland vegetation. Accordingly, the Commission finds that if major restoration work is carried out at San Dieguito, the resulting enhancement of tidal wetlands at San Dieguito Lagoon can be counted to some limited extent, toward the substantial restoration/creation requirement.

While reviewing the permittee's 1995 plan for San Dieguito Lagoon the Commission staff and the permittee attempted, but were unable, to reach agreement as to how much credit to allocate for enhancement through inlet maintenance. As a result, the permittee and the Commission staff agreed to allow the Interagency Wetland Advisory Panel (IWAP)[17] to serve as the arbitrator of this disagreement. Previously, the IWAP had been consulted on the issue of inlet enhancement, but now the IWAP was asked to make an official recommendation on the credit number.

The Commission staff, the permittee and its consultants presented to the IWAP during several meetings and follow-up discussions, the scientific arguments regarding an

[17] The IWAP, composed of wetland biologists from the resource agencies, was formed to advise the Commission on wetland mitigation issues related to the SONGS mitigation program.

appropriate level of credit for enhancement of existing tidal wetlands through inlet maintenance. After considering these arguments, the IWAP decided that the existing tidal wetlands would be enhanced by 28.1 percent through inlet maintenance. The IWAP attached five conditions (see Exhibit 3) to its percent enhancement value, two of which were relevant to the calculation of the credit: (1) the area of enhancement is limited to those areas at or below the Mean High Water level; and (2) the area of enhancement excludes any property owned by the California Department of Fish & Game (CDFG). They added that the CDFG property could be used only if an agreement was reached with CDFG, which included compensation for the use of a public trust resource (State property) for mitigation purposes. Because there are approximately 45 acres of wetland below the Mean High Water level (2.1' NGVD) and outside the CDFG property, the IWAP recommended 28.1% x 45 acres = 12.6 acres credit.

Consistent with the IWAP decision, the Commission finds that the existing tidal wetlands will be enhanced by 28.1 percent credit. However, the Commission will: (1) apply the percentage to all the areas below Mean Higher High Water (2.9' NGVD); and (2) include the CDFG Basin in the calculation. Therefore, at this time, the Commission's calculation of the enhancement credit for inlet maintenance is: 28.1% x 126 acres = 35 acres.

This credit of 35 acres is the maximum credit the permittee can obtain for inlet maintenance at San Dieguito Lagoon. The credit could be less if the restoration plan ultimately provides less than 126 acres of enhancement. For example, if the mitigation plan called for some destruction of existing tidal wetlands, those wetlands would not be considered enhanced. For instance, if 16 acres of existing tidal wetlands were to be covered by fill in order to build a river training berm then those 16 acres would not be enhanced by the inlet maintenance. Therefore, the actual enhancement credit for inlet maintenance would be: 28.1% x 110 acres = 31 acres. Thus, the actual credit given for enhanced acres will be determined by multiplying 28.1% by the total number of tidal wetland acres enhanced by the plan, but no more than 35 acres.

The purpose of the wetland mitigation project is to mitigate for fish losses caused by the operation of the SONGS Units 2 and 3 to ensure that the operation of the power plant is consistent with the Coastal Act. The enhancement of existing tidal wetlands at San Dieguito as a result of undertaking a major restoration project there will improve fish habitat (for example, by providing nursery areas and shelter for juvenile fish, such as halibut), leading to greater fish numbers. Therefore, amending Condition A to allow the permittee to obtain up to 35 acres of enhancement credit through permanent maintenance of a tidal inlet at San Dieguito is consistent with the Coastal Act.

2.3 Reduction in Buffer Requirements

The permittee's proposed amendments would replace the requirement for a buffer of "at least 100 feet" with a requirement to provide a buffer of "at least 100 feet...except in those areas where a smaller buffer is functionally adequate or otherwise appropriate (e.g., near existing development)." The effect of this change is to allow for the elimination or substantial reduction in the buffer requirements. This amendment would allow construction of wetlands directly adjacent to existing urban development without transitional upland habitat necessary to buffer the adverse impacts of adjacent development.

The Commission recognizes that a wetland created close to an existing structure, such as a freeway, will have less habitat value than a wetland that is separated from the adverse affects of human activity. For instance, polluted runoff from a freeway next to a wetland is likely to degrade the water quality of the wetland, while noise and vehicle movements will disturb some animals. Upland buffers therefore protect the wetland from human disturbances. Upland buffers also provide refuge habitat to wetland species escaping very high tides or floods.

In its findings in support of requiring a minimum 100-foot buffer the Commission stated: "An adequate buffer zone is necessary to protect and enhance adversity of wildlife values, to protect the wetland's water quality and to prevent sediment deposition" (see 1991 Findings p. 38).

In prior actions, the Commission has found that a buffer of at least 100 feet is necessary to ensure that the biological productivity of the wetland is adequately maintained. Section 30240 mandates that development adjacent to environmentally sensitive habitat areas, such as wetlands, be sited and designed to prevent adverse impacts. Also, Section 30231 requires that biological productivity and the quality of coastal wetlands be maintained. In addition, the Commission's Statewide Interpretive Guidelines for Wetlands suggest a minimum of a 100 foot buffer between new development and a coastal wetland.

Thus, for the restored wetlands to be biologically productive and achieve the goal of mitigating the adverse impacts of SONGS, they must be surrounded by an upland buffer of at least 100 feet. Therefore, to reduce the requirement for a 100-foot buffer in Condition A, as the permittee's amendment requests, would result in a less productive wetland that would not fully mitigate for the fish loss caused by SONGS Units 2 and 3. The permittee has not demonstrated that a lesser buffer would be adequate to achieve the goals identified by the Commission in 1991. Therefore, the permittee's amendment would make the development inconsistent with the Coastal Act.

2.4 Independent Monitoring

The permittee's proposed amendment shifts the responsibility for monitoring of the restored wetlands from the Commission to the permittee.

The Commission finds that it must maintain responsibility to implement independent monitoring to ensure objective data collection and interpretation. In 1991, the Commission found there was a need for monitoring to be conducted independent of influence from the permittee. At that time the permittee fully supported this finding (testimony by M. Hertel before the Commission on July 16, 1991). The requirement of independent monitoring was first suggested to the Commission by the MRC because it is a powerful mechanism for maximizing the objectivity of the collection, analysis, and interpretation of the data used to assess compliance with the permit.[18] As in 1991, the Commission finds that monitoring independent of the permittee is a necessary component of the required mitigation and therefore cannot accept the proposed condition amendments relating to monitoring.

2.5 Length of Monitoring

The permittee has proposed amendments to reduce the length of monitoring the wetland mitigation from the full operating life of SONGS (~30 years) to 10 years. A goal of Condition A is to achieve wetland values over the long-term. To achieve this goal, the restored wetlands must be monitored. The purpose of monitoring is to evaluate the performance of the restored wetlands and to ensure that the wetland continues to produce the resources needed to mitigate for the impacts of SONGS. Condition A sets forth a series of performance standards that, when met, indicate the wetland is biologically productive. Monitoring enables evaluation of these performance standards. Performance must be evaluated so that any problems can be identified and remediated.

Condition D establishes a strategy to reduce monitoring costs when the performance standards have been met for three years. Specifically, the permit (Condition D, 3.0) states that: "The mitigation projects will be successful when all performance standards have been met each year for a three-year period...If the Commission determines that the performance standards have been met and the project is successful, the monitoring program will be scaled down...The work program shall reflect the lower level of monitoring required. If subsequent monitoring shows that a standard is no longer being met, monitoring may be increased to previous levels, as determined necessary by the Executive Director."

The permittee asserts that the Commission has not required monitoring of other wetland mitigation projects for more than 10 years. However, this project is unique in that it is

[18] The need for independent monitoring is discussed further in the findings for Condition D.

intended to mitigate for large-scale fish losses—not wetland losses—that have been occurring and will continue to occur over the operating life of SONGS Units 2 and 3. To mitigate these losses, the restored wetlands need to sustain wetland value for at least the duration of the operating life of SONGS. Monitoring is the only way to insure such functioning. If the wetlands are monitored, problems that impede functioning can be identified and remediated.

The proposed amendment presumes that within 10 years of construction, the wetland project will meet the performance standards and the project will be considered a success. The Commission finds that achieving successful wetland mitigation within 10 years is possible but not guaranteed. The Commission is concerned that the mitigation project could fail to meet performance standards after year 10. This concern is also held by Dr. Joy Zedler, a coastal wetland expert. In her testimony to the Commission at the SONGS hearing on October 8, 1996, she stated that "As a veteran monitor of the San Diego Bay wetlands, where a 12-year old site has yet to begin to meet a 3-year mitigation requirement — 3 years of successful criteria — I would caution you that 10 years is probably not enough, that the life of the project is a better component, because what we are trying to produce is self-sustaining systems. It takes a long [time] to demonstrate that a system is truly self-sustaining."

To assure that the biological productivity and quality of wetlands are maintained so that fish habitat is provided over the full duration of the adverse impacts to fish, monitoring must occur for the full operating life of SONGS. Because the proposed amendments provide no way to determine whether the biological productivity and quality of the wetland mitigation is deteriorating prior to cessation of the impacts (i.e., power plant operation), the proposed amendments would make the development (i.e., SONGS) inconsistent with the Coastal Act.

2.6 Length of Maintenance and Remediation

The permittee also proposed amendments to reduce its responsibility for maintenance and remediation from the full operating life of SONGS (estimated to be approximately 30 years) to 10 years. The purpose of maintenance and remediation is to ensure that the mitigation site functions as a biologically productive wetland for at least the length of time that adverse impacts from SONGS occur.

Wetland construction and restoration is in its infancy. Those restoration projects that have been appropriately monitored have shown that problems are common.[19] Some of these problems become apparent immediately whereas others become obvious only after

[19] Zedler, Joy B., Principal Author. 1996. Tidal Wetland Restoration: A Scientific Perspective and Southern California Focus. Published by the California Sea Grant College System, University of California, La Jolla, California. Report No. T-038.

several years. Problems that could become apparent only after many years include those relating to the effects of rare storm events on the constructed wetlands. For instance, a 1-in-30-year storm event could produce extensive scour or burial of the restored wetlands resulting in extensive habitat degradation. Because of the uncertainties about the sustainability of constructed wetlands over the long-term, remediation funds must be available over the long-term to ensure continued success. (Such is the case for the Batiquitos Lagoon enhancement project where two trust accounts have been set up to allow for remediation in perpetuity.)

The permit requires remedial action for "the full operating life of SONGS" (i.e., approximately 30 years) to ensure that if the mitigation project fails to meet performance standards anytime during the period of SONGS-caused adverse impacts, remedial action would be undertaken. The Commission finds that only in this way can full compensatory mitigation be achieved. Under the permittee's proposed amendment, if the mitigation project falls out of compliance after 10 years, no remedial action would be undertaken. Therefore, full mitigation over the term of adverse impacts from SONGS could not be assured. To assure that the biological productivity and quality of mitigation wetlands are maintained (Section 30231), the Commission finds that remediation should occur over the full operating life of the power plant.

The permittee asserts that the Commission does not typically require remediation of a wetland mitigation project for the entire life of the development that triggered the need for the mitigation. However, the SONGS development differs from most typical development projects because of the scale of the impacts. SONGS adversely impacts some fish species well beyond the power plant itself; these fish populations are reduced **over the entire Southern California Bight**. The permittee proposed and the Commission agreed to mitigate these impacts not by changing the cooling system to avoid the fish losses but by creating or substantially restoring wetlands (i.e., compensation) to provide for increased production of fish. Wetland mitigation projects that mitigate fill of wetlands are not remediated forever, even though wetlands are filled forever, because arguably the filled wetlands might not have survived forever. However, the fish losses will occur for a known period of time—the operating period of SONGS Units 2 and 3. For these losses to be fully mitigated, the wetland mitigation intended to increase fish stocks must be successful for the entire operating period.

Thus, the Commission finds that the permittee's proposal to amend Condition A to reduce remediation to 10 years is inconsistent with the Coastal Act.

2.7 Changes to Performance Standards

The permittee has proposed several amendments to the performance standards. The most important proposed amendment would revise the performance standards for wetland

mitigation so that success of the wetland restoration project would be based upon comparison of the newly restored wetland with existing data from any Southern California wetland, instead of with concurrently obtained data from relatively undisturbed, natural, tidal wetlands. There are two parts to this amendment change: (1) the change to using any wetland in Southern California as a reference site rather than using only relatively undisturbed, natural, tidal wetlands as reference sites, and (2) the change to a fixed standard derived from existing data rather than using concurrently obtained data.

In its amendment submittal, the permittee proposes to "use over 450 wetland literature references and existing data from 20–25 wetland sites in Southern California to develop a means to measure attainment of the performance standards." Because most of these 20–25 sites are degraded, frequently non-tidal wetlands, the standards the permittee would develop would be substantially lower than those obtained from the "relatively undisturbed, natural tidal wetlands" as stipulated in the 1991 permit. Therefore, this amendment would allow the biological productivity and quality of the mitigation wetlands to be reduced.

Furthermore, using existing data to assess compliance of the wetland mitigation project is acceptable only if all of the following criteria are met:

1. the data are from relatively undisturbed tidal wetlands in Southern California and are for the variables listed as performance standards in the permit;
2. the data were collected using methods that allow for comparison of results;
3. the data exist for multiple years encompassing a wide range of environmental conditions; and
4. the values of the variables listed in the permit do not vary unpredictably over time.

After extensive review of the over 450 references from southern California wetlands cited by the permittee, the Commission found that in no case did the existing data meet all four of the above criteria; frequently the data did not meet any of the criteria. Therefore it is the Commission's opinion that these references are not useful in deriving standards for the mitigation wetland. These problems with the existing data were presented to the permittee during several meetings regarding the use of existing data.

Second, the permittee's amendments propose to evaluate the wetland mitigation project's performance against a fixed standard derived from existing data from reference sites rather than using concurrent sampling (i.e., simultaneous sampling) of reference and mitigation sites. The major advantage of using concurrent sampling is that changes that occur in the undisturbed tidal wetlands including long-term fluctuations, such as changes in the abundances of species will be accounted for. For instance, it is possible that an exotic species of fish could become very abundant over the next 10 years in all of the

undisturbed sites and the mitigation site. The concurrent sampling program would show that the abundance of the species at the mitigation site is similar to that at the reference sites and that no remediation is necessary. On the other hand, a monitoring program that required sampling of only the mitigation site and involved comparison to a fixed standard derived from data collected prior to 1997 would conclude that the abundance of the exotic fish was very high in the mitigation site and that unnecessary remediation should be undertaken to eliminate it from the mitigation site.

Concurrent sampling would also account for temporary or short-term fluctuations that occur in the undisturbed sites. For example, if environmental forces (e.g., an unusually wet winter) cause the variables of interest (e.g., water quality, or the abundance of fish or salt marsh plants) to decrease in value in the mitigation wetland, the wetland could still be in compliance, because the values of these variables also would have decreased in the reference wetland. In this way the permittee could be spared the expense of unnecessary remediation. This approach assumes that the restored and reference sites will respond in similar ways to given changes in the environment and available information indicates that natural coastal communities in southern California (including wetlands and reefs) do indeed respond similarly to regional changes in the environment.

Monitoring programs that use concurrent sampling are generally advocated by experts in experimental design and coastal wetlands (e.g., Dr. Joy Zedler at the November 13, 1996 SONGS hearing). The Commission concurs that monitoring the restoration and mitigation sites concurrently is the most scientifically defensible method for assessing compliance of the SONGS mitigation projects. This type of monitoring program ensures that the first three criteria listed above are met. Furthermore, since compliance is assessed using the present day condition of reference sites rather than conditions that existed in the past, it is not necessary for any changes in the values of performance standards to be predictable (criterion four).

Several other changes to the performance standards were proposed by the permittee, but in each case these would reduce the current standards. Specifically, all of the proposed amendments to Subsections 3.4.b.1 through 3.4.b.5 could reduce the level of benefit resulting from the required mitigation to a level below that required to achieve full compensation.

In conclusion, the Commission finds that the proposed amendments to the performance standards of Condition A would cause the SONGS Units 2 and 3 to be inconsistent with the Coastal Act.

2.8 Addition of an "Uncontrollable Forces" Clause

The permittee proposes to include an uncontrollable forces clause which will obviate the need for the permittee to remediate should failure to meet a performance standard occur due to an uncontrollable force, such as a major flood. In its rationale for this amendment, the permittee states "[a]s indicated in the Permit, the restoration design will take into account normal, expected natural occurrences, but catastrophic conditions should not cause remedial measures to be imposed upon the Permittee." However, by using reference sites in the evaluation of project performance, the original permit condition provides the flexibility necessary to account for changes at the mitigation site due to many uncontrollable events. This is because the performance of the mitigation wetland is always determined relative to the performance of the reference sites. Thus, environmental catastrophes are accounted for through the concurrent monitoring of reference sites. For example, southern California wetlands are frequently subjected to heavy flooding. If a flood should occur at the mitigation site and the monitoring showed that fish abundances had declined to almost zero, remediation would not necessarily be required because similar concurrent information taken at the reference wetlands would show that fish abundances had declined there too. Because the mitigation wetland would still be performing similar to the reference wetlands, no remediation of the mitigation site would be necessary, even though the catastrophe had a significant impact on fish abundance at the mitigation site.

As long as SONGS is operational, resources are being lost. For the restored wetlands to mitigate the adverse impacts of SONGS Units 2 and 3 the wetlands must provide substantial fish habitat within a balanced ecosystem. The wetlands must be a success for at least the duration of the adverse impacts. To ensure that the biological productivity and quality of the mitigation wetlands are maintained so that fish habitat is provided for the duration of the adverse impacts to fish, the Commission finds that an uncontrollable forces clause should not be added to Condition A.

2.9 Other Minor Changes

The permittee has proposed to make several minor changes to the 1991 permit due to proposed project-specific constraints. Specifically, revisions are proposed to Subsections 1.3(h), 1.3(i) and 1.4(e). These proposed amendments address project impacts to endangered species and existing functional wetlands. Because these are project specific issues and because of the uncertainty surrounding the proposed project at San Dieguito lagoon, it is not appropriate for the Commission to amend Condition A as proposed.

3.0 FUNDING OPTION FOR THE WETLAND RESTORATION PROJECT

Although not proposed by the permittee, the Commission finds that the requirements of Condition A can be satisfied as part of the total funding option package provided in revised Condition D, Sections 4.0 through 4.3. Of the total amount paid by the permittee under these provisions, $55.63 million is designated to fund implementation of restoration of 150 acres of wetland. The Commission finds that its permit allowing development of SONGS Units 2 and 3 is consistent with the Coastal Act only if the adverse impacts to marine resources are fully mitigated. The Commission also finds that the adverse impacts to marine resources are fully mitigated only if, among other things, the coastal wetland mitigation requirements are implemented.

The Commission finds that Condition A can be amended consistent with the Coastal Act to allow the permittee to satisfy its mitigation obligation under Sections 1 through 3 of Condition A through payment of $55.63 million as part of the total funding option package for the following reasons. First, cost estimates for implementation are based on information from the State Coastal Conservancy, JPA and professional engineering consultants (see cost breakdown in Appendix F). Thus, there is a reasonable certainty that $55.63 million is a sufficient amount of money to fund restoration of 150 acres of wetland that fully compensates for the losses of marine fish standing stocks due to the operation of SONGS.

Second, independent entities, including the State Coastal Conservancy and University of California, have expressed interest in assuming some or all responsibility for the implementation of the wetland restoration required by Condition A. Thus, there is reasonable certainty that an independent entity exists that is capable of and willing to implement the required project.

Third, the feasibility of wetland restoration that successfully mitigates for the adverse effects of SONGS on fish remains unchanged whether implementation is carried out by the permittee or by an independent entity using funds provided by the permittee.

Finally, the funding option includes specific line items for wetland maintenance and remediation, with implementation and assessment completed by an independent entity, thus ensuring there are sufficient funds to successfully achieve wetland restoration that fully compensates for the fish losses due to the operation of SONGS Units 2 and 3 as required by Condition A.

E. FINDINGS FOR APPROVAL OF REVISED AMENDMENTS OF CONDITION C: KELP REEF MITIGATION

This section presents the Commission's findings in support of amending Condition C, as set forth in the Special Conditions to this permit amendment. Condition C describes the second element of the compensatory mitigation program required to offset the substantial adverse effects of SONGS Units 2 and 3 on the marine environment.

1.0 PURPOSE OF CONDITION C

Complete findings for the purpose of Condition C are described in the findings for permit 6-81-330 (formerly 183-73) and incorporated here by reference. A summary of the key points of these findings is presented below.

The overall goal of the mitigation reef is to compensate for the loss of kelp bed resources including giant kelp, kelp bed invertebrates, and kelp bed fishes. Coastal Act Section 30230 states "[m]arine resources shall be maintained, enhanced, and where feasible, restored." The operation of SONGS Units 2 and 3 has been shown to adversely impact the maintenance of marine species populations. Thus, SONGS Units 2 and 3 are consistent with the Coastal Act only if the significant adverse impacts to kelp bed resources identified by the Marine Review Committee (MRC) are fully mitigated. Condition C sets forth a process for site selection, mitigation plan development, plan implementation, project monitoring, and remediation. This comprehensive process was required by the Commission in 1991 to ensure the kelp reef mitigation project would compensate for the kelp bed resource losses over the full operating life of SONGS.

The MRC recommended and the Commission found that compensation for the kelp bed community losses, in the form of an artificial reef, was preferable to redesigning the SONGS cooling system to avoid the adverse impacts because: (1) the artificial reef is likely to replace the lost resources; and (2) the cooling system changes cause additional impacts, have engineering problems, and are costly. Condition C requires the permittee to construct a 300 acre artificial reef that develops and maintains a kelp bed community, and has a physical structure as similar as practicable to San Onofre kelp bed (SOK). The performance standards, monitoring, and remediation provisions set forth in Condition C are designed to ensure that the artificial reef will to the fullest extent possible replace the kelp bed community resources lost at SOK.

2.0 AMENDMENTS TO CONDITION C PROPOSED BY PERMITTEE

The permittee proposes to eliminate the requirement that it create a 300 acre artificial reef as compensatory mitigation for the SONGS' adverse impacts to the SOK community. Instead, the permittee proposes in its amendment request to construct a 16.8 acre

"experimental artificial reef for kelp as mitigation for possible resource losses at SOK." In addition, the permittee proposes to eliminate the performance standards, independent monitoring program, and remediation requirements, which hold the permittee responsible for providing a successful kelp bed community for the full operating life of SONGS. Instead, the permittee proposes in its amendment request to "make scientific observations of the experimental reef over a 10-year period." The permittee would submit a report "that includes recommendations for future reef construction designs to the Commission" at the end of the observation period.

On November 4, 1996, the permittee submitted an alternative proposal for Condition C.[20] The permittee also presented this alternative proposal to the Commission at its November hearing. However, the permittee did not characterize the alternative proposal as an amendment to its original amendment request. Thus, the alternative proposal is not specifically before the Commission and only the original permit amendment request is analyzed for consistency with the Chapter 3 policies of the Coastal Act. A summary of this alternative proposal is presented here, however, to provide a complete description of the Commission's understanding of the relevant issues.

The alternative proposal recommended the Commission accept the permittee's initially proposed experimental reef plan and allow self monitoring for ten years. The monitoring results would be used in designing a second 39.5 acre mitigation reef, for a total of 56.3 acres of kelp reef mitigation. The alternative proposal also included an option for the permittee to provide $3.5 million to fund a third party to build the mitigation reef. Through its alternative proposal the permittee also offered to provide funds for monitoring of the mitigation reef, although no funds were allocated for remediation.

Because of the discrepancies between the permittee's amendment request and its alternative proposal, the staff requested the permittee provide written clarification of its proposed project and Condition C amendments.[21] As of the date of this report, the permittee has not provided clarification of its proposed project and Condition C amendments, but instead offered "to undertake the engineering and other planning work for the experimental reef absent a resumption of the hearing in April."[22] As a result, only the information submitted in the permittee's original (August 16, 1996) amendment request is analyzed for consistency with the Chapter 3 policies of the Coastal Act.

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[20] November 4, 1996 letter from Michael Hertel to Chairman Louis Calcagno and Members of the California Coastal Commission.
[21] January 29, 1997 letter from Susan Hansch to Michael Hertel and Frank Melone; Re: SONGS Permit Amendment Request.
[22] February 14, 1997 letter from Michael Hertel to Susan Hansch, Re: SONGS Permit Amendment Request.

3.0 ANALYSIS OF KELP IMPACTS AND MITIGATION

This section presents an overview of the technical analyses completed to determine the adverse impacts of SONGS operation on the San Onofre kelp bed and the required mitigation.

3.1 MRC Studies of the Effects of the Once-Through Cooling System Discharges

The MRC's studies used an innovative research design called BACIP (Before-After/ Control-Impact Paired) which was developed by the MRC. Most impact studies estimate effects by comparing the impact site to a control site or by comparing the impact site before and after the impact has occurred. The BACIP method combines both of these techniques and compared the change in kelp abundance, **before** and **after** SONGS began operating between a **control** and **impact** site.[23] This design allowed the MRC to answer the question: **Did the average difference in kelp abundance between the control (SMK) and impact (SOK) sites change after SONGS began operating?** Where possible, the MRC used experimental studies to determine the mechanisms that lead to the measured adverse effects.

The BACIP technique was necessary to assess the potential impacts to the San Onofre kelp bed (SOK) because kelp abundance changes naturally over time. The MRC concluded that comparing the average size of SOK to a nearby control site over time was the most accurate way to objectively account for these natural changes in assessing the potential impacts of SONGS operation on SOK.

The MRC studies concluded that a turbid plume produced by SONGS' once-through cooling water discharges adversely affected giant kelp, kelp-bed fish, and kelp-bed invertebrates within SOK. Based on these studies, the MRC estimated that as long as SONGS continued to operate, the area of medium to high density kelp in SOK would be on average 200 acres smaller than it would be in the absence of SONGS. The MRC concluded that this reduction in the area of giant kelp in SOK (relative to the control site—San Mateo kelp bed—hereafter referred to as SMK) resulted from increased turbidity and sedimentation that caused a decrease in the production of new kelp plants. The MRC also concluded that the turbid plume did not increase the death rate of existing adult plants in SOK. The reduction in giant kelp as well as increased turbidity and sedimentation were implicated as the major factors contributing to the relative loss of kelp-bed fish and kelp-bed invertebrates.

[23] For a complete description of BACIP see MRC Interim Technical Report 2, Sampling Design and Analytical Procedures (BACIP).

3.2 Effects of SONGS' Discharges Were Reanalyzed by the Permittee Using Additional Data

The MRC's findings on giant kelp were based on data collected between 1982 and 1988. During this period the MRC also collected data on kelp bed invertebrates, kelp-bed fish, and the physical variables that were most likely to influence these organisms (e.g., light, ocean temperature, nutrient concentrations, and rates of sedimentation). Moreover, the MRC conducted experiments to identify the specific mechanisms by which SONGS caused changes to the kelp bed community.

As part of its water quality compliance monitoring, the permittee has continued to collect data on giant kelp abundance using the same data collection methods employed by the MRC. The permittee, however, has not collected similar data for kelp-bed fish, kelp-bed invertebrates, temperature, light, nutrients, and sedimentation, nor has it continued the types of experimental studies that the MRC conducted.

In September 1995, the permittee submitted a report to the Commission staff that used its new information on kelp abundance, in addition to the MRC's data, to create an extended data set on giant kelp abundance (a revised version of this report, hereafter referred to as Dean and Deysher 1996, was submitted in April 1996). Dean and Deysher (1996) used a BACIP analysis on data collected through July 1995 that was similar, though not identical, to the one used by the MRC. The authors concluded that the average loss of medium to high density kelp at SOK over the operating life of SONGS was between 48 and 110 acres (the size of the impact varied depending on whether kelp abundance was calculated using downlooking or sidescanning sonar data and on the assumptions used concerning changes in potentially confounding factors such as sea urchin grazing and the amount of hard substrate). These estimates are less than the 200 acres estimated by the MRC using data collected through 1988. Because the permittee did not conduct experimental studies or collect data on other physical and biological components of the kelp bed, Dean and Deysher (1996) could only speculate on the potential causes that could lead to a lessening of SONGS' impact on giant kelp as indicated by the extended data set.

Dean and Deysher (1996) was reviewed by an independent panel consisting of three scientists chosen jointly by the permittee and the Commission staff. The panel generally agreed with the approach (i.e., the BACIP approach) used by Dean and Deysher and the MRC for estimating the size of SONGS impacts. Although the panel criticized specific parts of Dean and Deysher's analyses, it agreed with their qualitative conclusion that the effects of SONGS' discharges on giant kelp were much less than those estimated by the MRC. The panel was not asked to provide a quantitative estimate of SONGS' impact on giant kelp; however, it made recommendations for future analyses aimed at quantifying the area of kelp lost at SOK (relative to SMK) as a result of SONGS' turbid discharge plume.

In its amendment request, the permittee cites the panel's review as evidence for "[the] lack of SONGS significant adverse impact on kelp" and proposes a 16.8 acre experimental reef "as more than adequate mitigation for any kelp impacts caused by SONGS".[24] This assertion by the permittee is flawed because: (1) the panel's review never claimed that there is a lack of SONGS significant adverse impact on kelp; (2) the size of the permittee's proposed kelp mitigation project (i.e., 16.8 acres) is not based on any scientific analyses that estimate the extent of SONGS impact on kelp; (3) the permittee's own kelp consultants (Dean and Deysher, 1996) found the average area of kelp loss was between 48 to 110 acres; and (4) the permittee provides no documentation that the proposed 16.8 acre experimental reef will fully compensate for the kelp-bed resources (including fish and invertebrates) lost through SONGS' operation.

3.3 Updated Estimate of Impacts to the San Onofre Kelp Bed Based on New Information

Staff scientists[25] have analyzed the permittee's extended data set on giant kelp abundance incorporating recommendations made by the Independent Review Panel and assumptions made by the permittee's consulting scientists (Dean and Deysher, 1996) concerning the confounding effects of sea urchin grazing. (See Appendix D for details on these analyses.) Following these recommendations and assumptions, the impact of the operation of SONGS was estimated to be an average loss of 122 acres of kelp. This estimate is based on kelp abundance data collected with sidescanning sonar. Using the same analytical methods with more accurate data on kelp abundance collected with downlooking sonar produced an estimated loss of 179 acres on average. Thus, the staff scientists' analyses of the extended data set provided by the permittee estimates that SONGS' operation has caused an average loss of 122 to 179 acres of medium to high density kelp. There is a sound scientific basis for regarding the 179 acre estimate of loss as the more reliable (see Appendix D). This loss is expected to persist as long as SONGS continues to operate at historical levels.

In the San Onofre region sediment accumulation and erosion can cause the area of hard substrate to fluctuate over time. Such fluctuations can have important consequences on the distribution and abundance of kelp, because hard substrate is required for the establishment of kelp. Consequently, the manner in which changes in the area of hard substrate are accounted for can greatly influence estimates of the area of kelp lost as a result of SONGS' operations.

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[24]Volume I, Section F, page 6,: *Submittal to Amend and Fulfill Certain Conditions of Coastal Development Permit No. 6-81-330 (SONGS Units 2 & 3).* August 16, 1996 Submitted by Southern California Edison

[25] As required by the 1991 SONGS permit, the Commission has retained scientists for the purpose of assisting the Commission staff in overseeing permit condition compliance. These scientists are referred to as "staff scientists" throughout this permit.

Much of the difference between the staff's estimates of kelp loss (122 to 179 acres) and Dean and Deysher's estimates (48 to 110 acres as reported in the permittee's August 1996 amendment request, as well as in its response to the October 1996 staff report) are due to whether adjustments were made for changes in the area of hard substrate. For example, Dean and Deysher's (1996) estimate of 48 acres and the staff scientists estimate of 179 are both based on kelp abundance data collected using downlooking sonar. The large discrepancy between these two estimates is due almost entirely to the fact that Dean and Deysher (1996) standardized kelp abundance to the area of hard substrate, while the staff scientists did not. By contrast, estimates of kelp loss using sidescanning sonar data by Dean and Deysher (110 acres) and the staff scientists (122 acres) are much closer because neither of these two estimates incorporates an adjustment for hard substrate. Overall, however, the permittee's amendment request ignores these estimates of kelp loss, arguing instead that a 16.8 acre artificial reef would fully compensate for any adverse impacts of SONGS on the San Onofre kelp bed.

Standardizing the area of kelp loss to the area of available hard substrate as done by the permittee's consulting scientists may greatly underestimate the overall effects of SONGS operation on kelp, because it implicitly assumes that SONGS has no effect on the area of available hard substrate. However, analyses using recently obtained information on hard substrate implicate SONGS as the cause of a 167 acre loss of hard substrate in the San Onofre kelp bed (see Appendix D for details). Estimates of kelp loss that are based on direct measures of kelp abundance (as done by the staff scientists) rather than on measures that are standardized to the area of hard substrate (as done by the permittee's consulting scientists) account not only for losses due to SONGS' direct effects on kelp, but also account for losses due to SONGS' indirect effects on kelp (via SONGS' adverse effects on area of hard substrate). The new data on hard substrate has the same scientific standing as the permittee's new data on kelp abundance. Further, this new information confirms the recommendation of the Independent Review Panel to focus estimates of kelp loss directly on kelp abundance **without** adjustments to area of hard substrate.

The Commission finds that the permittee's estimates of SONGS' impact on kelp abundance substantially underestimate SONGS' actual adverse impacts on the San Onofre kelp bed. The staff scientist's estimates of SONGS' effect on kelp provided in Appendix D use the recommended procedures of the Independent Review Panel and have been reviewed and corroborated by one member of the panel (Exhibit 4, 2 October 1996 letter from Craig Osenberg to Peter Douglas) and endorsed by another member of the panel (Exhibit 5, November 1996 letter from Paul Dayton). Thus, the staff scientists' estimates are credible and scientifically valid, showing that SONGS' operation results in an ongoing average reduction in the size of the San Onofre kelp bed of ~~at least~~ 122 acres using sidescanning sonar data and 179 acres using downlooking sonar data. Given the greater accuracy of the downlooking sonar data the Commission finds that the estimated kelp loss of 179 acres is the more reliable.

Therefore, the Commission finds that, as the permittee proposed, re-examination of the SONGS' impact on kelp abundance within the San Onofre kelp bed does show the effects of SONGS' operation are less than originally estimated by the MRC (ca. 200 acres), but far more than the zero impact postulated by the permittee. As a result, the mitigation required of the permittee pursuant to Special Condition C shall be based on an effect size of ~~122~~ 179 acres of medium to high density kelp. The Commission finds this effect size is based on the most ~~conservative~~ reliable science-based estimate of kelp loss. ~~that is still within the range of credible science-based estimates~~.

3.4 Mitigation for Impacts to the San Onofre Kelp Bed

Condition C requires the permittee to mitigate for the kelp bed losses caused by SONGS operation through a combination of methods. The Commission finds that in order to compensate for the 179 acres of kelp bed loss, the permittee ~~to~~ shall: (1) construct an artificial reef that develops and maintains a kelp bed community of 150 acres that has a physical structure as similar as practicable to that found in SOK; and (2) pay $3.6 million to fund a mariculture/marine fish hatchery program. The artificial reef is intended to replace losses of kelp, kelp-bed fish and kelp-bed invertebrate at SOK caused by the operation of SONGS Units 2 and 3. The MRC based its mitigation requirement for these losses on the average relative loss in the area of medium to high density giant kelp at SOK (defined as greater than 4 plants per 100 m^2). Due to the risks inherent in replacing a natural ecosystem with a designed ecosystem and because it was unlikely that kelp on average would cover the entire reef, the MRC recommended and the Commission approved a mitigation reef that was 50 percent larger than the estimated area of relative kelp loss.

In addition to constructing the artificial mitigation reef, Condition C requires the permittee to pay $3.6 million to OREHP (Ocean Resources Enhancement and Hatchery Program) for the purpose of funding a mariculture/marine fish hatchery program. This requirement will provide compensation for resources not replaced by the artificial mitigation reef. The Commission recognizes that marine fish hatcheries have not yet been demonstrated to enhance fish stocks. However, recent results from the Carlsbad white seabass hatchery are promising, and this technique has the potential for substantially enhancing coastal fish populations, including those utilizing kelp beds. Although there is uncertainty about the effectiveness of the fish hatchery there is also uncertainty about the success of the artificial mitigation reef; together, they "spread the risk" and raise the level of certainty that mitigation will actually be sufficient to compensate for the kelp bed resources lost due to the operation of SONGS.

~~The amended Condition C requires the permittee to construct an artificial reef as compensation for losses to the kelp bed community at SOK caused by SONGS' operation. The amended Condition C requires the kelp reef mitigation (122 acres) to be comprised of~~

~~two parts~~ The artificial reef component of Condition C is to be done in two phases: (1) a 16.8 acre experimental reef; and (2) a ~~105.2~~ 133.2 acre mitigation reef. The experimental reef would be constructed first, and information gained from studies of the experimental reef will be used to design the mitigation reef. Thus, the primary goal of the experimental reef is to test several promising substrate surfaces and configurations to determine which of these can best provide: (1) adequate conditions for giant kelp recruitment, growth, and reproduction; and (2) adequate conditions to establish a community of reef-associated biota. Specifically, implementation of the experimental reef will allow for extended field testing of several reef designs. It is not expected, nor is it intended, that all designs tested in the experimental reef will meet all of the performance standards for the mitigation reef. The experimental reef will be studied for 5 years, which according to Commission staff and the California Department of Fish and Game's artificial reef experts, is the minimum time needed to evaluate the different reef designs. During the 5 year monitoring period, mechanistic studies will be necessary to assess the effectiveness of the alternative reef designs, materials, and management techniques. Condition C requires the permittee to fund these mechanistic studies and any other studies that the Executive Director deems necessary to make reliable projections of reef performance over the long term. Results from ~~follow-up~~ monitoring and experimental studies will be used to determine the most cost-effective reef design (i.e., type and percent cover of hard substrate) that maximizes the chances for successful mitigation. That design will serve as the basis for designing the larger mitigation reef. All studies of the experimental reef will be designed and carried out by scientists chosen by the Executive Director to insure that the results and interpretation of these studies are independent of the permittee.

Following completion of independent monitoring of the experimental reef, the permittee must develop preliminary and final plans for construction of the full mitigation reef. Condition C sets forth the deadlines for submission of plans and initiation of construction of the full mitigation reef. These deadlines are necessary to insure timely implementation of the mitigation requirements.

The amended Condition C requires the kelp reef mitigation (i.e., the mitigation reef combined with the experimental reef) to support, on average, at least ~~122~~ 150 acres of medium to high density kelp, 28 tons of fish, and invertebrate and fish assemblages that are similar to natural reference reefs. If the kelp reef mitigation does not achieve these standards, then remediation shall occur (most likely by increasing the total area of reef) until the biological performance standards are met.

~~A 122-acre artificial reef with two thirds (67%) cover of rock should be sufficient to replace losses to kelp-bed fish, and kelp-bed invertebrates at SOK. However,~~ It should be noted that the average area of medium to high density kelp produced by a ~~122~~ 150-acre reef will, in all probability, be less than ~~122~~ 150 acres. This is because typically only a portion of the reef area (whether artificial or natural) supports a sustained population of medium to high

density kelp. For example, on average only about 50 percent of the hard substrate in the control site, San Mateo kelp bed, has historically supported medium to high density kelp. If this turns out to be the case for the mitigation reef, then the appropriate remediation would be to double the size of the reef (to ~~244~~ 300 acres) in order to meet the requirement of ~~122~~ 150 acres of medium to high density kelp. If on the other hand it was determined that 75 percent of the mitigation reef area supported medium to high density kelp, then the appropriate remediation would be a reef that is 1.25 times as large as the ~~122~~ 150 acre reef (i.e., the addition of ~~30~~ 37.5 acres for a final reef size of ~~152~~ 187.5 acres).

Rather than require a kelp reef mitigation project that is larger than the area of estimated kelp loss based on a predetermined level of resource enhancement (as required by the Commission's 1991 permit action), the permittee's artificial reef mitigation requirement in the Commission's revised Condition C is ~~based solely on the extent of estimated impact~~ to compensate for ~~the kelp bed of 122~~ 150 acres of kelp bed loss~~; this is the minimum estimated impact~~. Thus, depending on the performance of the mitigation reef, the mitigation ratio of [the final area of the mitigation reef] to [the area of medium to high density kelp lost] may be larger or smaller than the 1.5 ratio imposed by the Commission in its 1991 permit action. Given that the appropriate mitigation ratio cannot be accurately determined in advance of the mitigation project, the Commission finds it is most prudent to provide for the potential need to construct additional reef through the remediation provisions of Condition C.

To address the potential need to expand the reef to achieve ~~122~~ 150 acres of medium to high density kelp, the Commission has included a provision in the revised Condition C for reef remediation over the full operating life of SONGS. Further, the revised Condition C fixes the cost of remediation only if the permittee chooses to provide funds for third party implementation of the mitigation reef through the funding option contained in revised Condition D. The Commission fully expects that the ~~$6.72~~ $8.23 million designated for remediation in the funding option will be sufficient to fund augmentation of the reef if the kelp abundance performance standard is not met, and to fund other unforeseen deficiencies in the mitigation reef. Only after the reef has successfully performed for the full operating life of SONGS would any unspent remediation funds be returned to the permittee.

~~As noted previously, the revised Condition C requires the permittee to provide or fund provision of 122 acres of medium to high density kelp through construction of 122 acres of artificial reef and through future augmentation if deemed necessary. However, in setting this requirement, the Commission is only requiring the minimum level of mitigation, since the operation of SONGS' is estimated to result on average in the loss of between 122 to 179 acres of kelp. This range of impact is the narrowest scientifically based estimate available to the Commission, and it is within the Commission's discretion to select the most appropriate point estimate. The Commission finds the requirement of 122 acres is an~~

~~appropriate amount of mitigation based on the following evidence: (1) the Independent Review Panel concluded "that the impact of SONGS on kelp abundance is much less than originally predicted by the MRC."[26] The staff's lower estimate of 122 acres of kelp loss is more consistent with this conclusion than their higher estimate of 179 acres; and (2) the estimate of 122 acres is based on the Independent Review Panel's recommended approach for quantifying the impacts of SONGS' operation on kelp. Following the Independent Review Panel's recommendations provides an independent and objective estimate of impact.~~

4.0 CONSISTENCY WITH THE COASTAL ACT

In the rationale for the proposed amendment the permittee claims that "[t]he proposed amendments are based largely on a reduction in the estimated impacts of SONGS on kelp, made as a result of analysis of newly obtained data. Given that the estimates of impact are substantially reduced, and that any estimates of significant impact are uncertain, this new plan should serve as mitigation for any possible impacts." The Commission agrees that new data collected since the MRC studies indicate that the estimated adverse effects of SONGS on SOK are less than previously estimated by the MRC.

In approving the coastal development permit for SONGS Units 2 and 3, the Commission found that the construction and operation of SONGS would be inconsistent with the Coastal Act unless the adverse effects of SONGS on SOK were fully mitigated. An objective, science-based analysis of the new data (Appendix D), based on the recommendations of the Independent Review Panel, shows that a mitigation reef substantially greater than that proposed by the permittee in its amendment proposal is needed to mitigate the adverse impacts of SONGS Units 2 and 3. Without adequate mitigation for the adverse impacts to the San Onofre Kelp bed community, past and continued operation of SONGS is inconsistent with the Coastal Act.

Applicable policies and provisions of the Coastal Act require mitigation to fully compensate for the adverse impacts of SONGS on the marine environment. Specifically, Coastal Act Section 30230 requires that marine resources be maintained, enhanced, and where feasible, restored, and that special protection be given to species of special biological or economic importance. Coastal Act Section 30231 requires the maintenance of optimum populations of marine organisms, and Coastal Act Section 30233(a) requires that qualifying development (such as SONGS) may only fill open coastal waters where, among other requirements, feasible mitigation measures have been provided to minimize adverse environmental effects.

~~[26] Dayton, P.K., C.W. Osenberg, and J.R. Skalski. 1996. Independent Technical Review of Studies by Southern California Edison on Impacts to Kelp Resulting from the Operation of SONGS 2 and 3. Submitted to the California Coastal Commission and Southern California Edison Company.~~

Giant kelp is a species of special biological and economic importance, subject therefore to the special protection afforded by Coastal Act Section 30230. The harvest of giant kelp (*Macrocystis*) is a multi-million dollar industry in California. Moreover, giant kelp provides habitat and food for a diverse assemblage of animals, many of which also have high biological and economic importance. For example the red sea urchin fishery is one of the largest fisheries in California and is critically dependent on abundant kelp, which is the primary food of red sea urchins.

The MRC studies predicted that over its operating life SONGS would cause on average a 200-acre reduction in the size of the San Onofre kelp bed. ~~Analyses by the Commission's staff scientists of the permittee's extended data set, conducted according to the approach recommended by an independent review panel, shows that the revised estimate of kelp losses is between 122 and~~ Based on new information provided by the permittee and analyzed by staff, the Commission's revised estimate of kelp loss is 179 acres per year on average over the operating life of SONGS. The Commission therefore finds that~~finds, therefore, that~~ Condition C can be amended to address the permittee's additional data regarding the impact of SONGS on SOK. However, for the amendment to be consistent with the Coastal Act, the revised Condition C must compensate for the adverse effects of SONGS Units 2 and 3 by, at a minimum, ~~provide for the creation of 122 acres of artificial reef for the purpose of growing kelp and establishing a healthy kelp bed community to compensate for the adverse affects of SONGS Units 2 and 3~~ (1) providing for the construction of an artificial reef which will produce 150 acres of medium-to-high density kelp and an associated healthy kelp bed community, and (2) providing $3.6 million to fund a mariculture/marine fish hatchery program which will compensate for lost resources not replaced by the artificial reef.

For the reasons cited above, the Commission finds that only if Condition C is revised as set forth in the Special Condition C would the adverse effects caused by the operation of SONGS Units 2 and 3 since 1984 be adequately mitigated consistent with the applicable policies and provisions of Coastal Act Sections 30230, 30231 and 30233.

5.0 FUNDING OPTION FOR THE MITIGATION REEF PROJECT

The Commission finds that the requirements of Sections 1 and 2 of Condition C can be satisfied as part of the total funding option package provided in revised ~~c~~Condition D, sections 4.0 through 4.3. Of the total amount paid by the permittee under these provisions, ~~$36.3~~ $43.84 million is designated to fund implementation of the experimental and mitigation reefs and remediation for the mitigation reef. (See the detailed cost breakdown in Appendix F.) The Commission finds that its permit allowing development of the SONGS Units 2 and 3 is consistent with the Coastal Act only if the adverse impacts to marine resources are fully mitigated. The Commission also finds that the adverse impacts to marine resources are fully mitigated only if, among other things, an artificial reef

supporting at least a ~~122~~ 150 acres of medium to high density kelp and associated biota is created and $3.6 million is paid to OREHP to fund a mariculture/marine fish hatchery program to serve as compensation for lost resources not replaced by the artificial reef.[27]

The Commission finds that Condition C can be amended consistent with the Coastal Act to allow the permittee to satisfy its mitigation obligation under Sections 1 and 2 of Condition C through payment of ~~$36.3~~ $43.84 million as part of the total funding option package for the following reasons. First, cost estimates for implementation are based on information from the California Department of Fish and Game Artificial Reef Program and licensed contractors who have constructed artificial reefs in the Southern California Bight (see cost breakdown in Appendix F). Thus, there is reasonable certainty that ~~$36.3~~ $43.84 million is a sufficient amount of money to fund construction of an artificial reef that ~~fully~~ compensates for the losses incurred by the kelp bed community due to the operation of SONGS.

Second, independent entities including the Department of Fish and Game, the University of California, and the United Anglers of Southern California have all expressed interest in assuming some or all responsibility for the implementation of the kelp reef mitigation required by Condition C. Thus, there is reasonable certainty that an independent entity exists that is capable of and willing to implement the required project.

Third, the feasibility of an artificial reef that successfully mitigates for the adverse effects of SONGS on kelp remains unchanged whether implementation is taken on by the permittee or by an independent entity using funds provided by the permittee.

Fourth, implementation of the mitigation reef will be based on results from the experimental reef. Implementation and study of the experimental reef will provide much of the information needed to design a successful mitigation reef, thereby further ensuring that the reef so constructed compensates for the lost kelp bed resources.

Finally, the funding option includes a specific line item for reef remediation, with implementation and assessment completed by an independent entity. Additionally, any construction funds remaining after full implementation shall be used to construct additional kelp reefs in the Southern California Bight to further ensure full compensation for the kelp bed resources lost due to the operation of SONGS Units 2 and 3.

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[27] These hatchery funds are a separate requirement that is not optional and are therefore not included in the funding option in Condition D.

F. FINDINGS FOR AMENDMENT OF CONDITION D: ADMINISTRATIVE STRUCTURE

This section presents the Commission's findings in support of amending Condition D to include a funding option for the entire mitigation package for Conditions A, Sections 1 and 2 of Condition C, and Sections 1 through 3 of Condition D that allows the permittee to fund other parties, as designated by the Executive Director and approved by the Commission, to undertake these responsibilities. Condition D describes the administrative structure for the permittee to fund independent monitoring, and the Coastal Commission's management and technical oversight required by Conditions A through C.

1.0 PURPOSE OF CONDITION D

Findings for the purpose of Condition D are described in the findings for permit 6-81-330 (formerly 183-73) and incorporated here by reference.

Condition D, as set forth in CDP 6-81-330, provides the administrative structure for the permittee to fund the monitoring, management, and technical oversight called for in Conditions A through C. The text of existing Condition D is unchanged with the exception of adding a funding option to allow the permittee to pay the costs of satisfying the requirements of Conditions A, C[28] and D. This change responds to the permittee's concerns about the uncertainty of potential increases in project costs in the future while providing the financial and administrative means for the Commission to ensure that full permit compliance is achieved.

Specifically, the condition as presently set forth:

- Enables the Commission to retain scientists and technical staff to assist the Commission in carrying out its oversight and monitoring functions for the requirements set forth in Conditions A through C;
- Provides for a scientific advisory panel to advise the Commission on the design, implementation, monitoring, and remediation of the mitigation projects;
- Assigns financial responsibility for the Commission's oversight and monitoring functions to the permittee and sets forth associated administrative guidelines; and
- Provides for periodic public workshops on the performance of the mitigation projects.

Condition D establishes an administrative structure and provides funding for the expertise necessary for objective, science-based decision-making and eliminates the potential for

[28] The $3.6 million funding requirement for the mariculture/marine fish hatchery program is a separate requirement contained in Section 3 of Condition C that is not optional and therefore not included in the funding option.

partiality of project evaluation that may arise when a permittee is required to choose between cost containment and the complete mitigation required to comply with the conditions of a permit. This expertise is presently provided to the Commission by a science advisory panel and a small technical oversight team. The current science advisory panel members include Richard F. Ambrose, PhD, Associate Professor, UCLA, William Murdoch, PhD, Professor, UC Santa Barbara, and Peter Raimondi, PhD, Assistant Professor, UC Santa Cruz. The technical oversight team members include John Boland, PhD, wetlands ecologist, Daniel Reed, PhD (half-time), kelp forest ecologist, and Stephen Schroeter, PhD (half-time), invertebrate ecologist.

2.0 AMENDMENT OF CONDITION D PROPOSED BY THE PERMITTEE

The permittee proposes to amend Condition D in the following ways:

1. Eliminate independent monitoring of the performance of wetland and marine mitigation projects and replace with monitoring by the permittee;
2. Substantially reduce the Commission's oversight and management role, and provide review-only or advisory roles for other state and federal agencies;
3. Eliminate all permittee funding for Commission oversight functions;
4. Shift annual project performance review responsibilities from Commission staff to the permittee;
5. Eliminate the requirement that performance standards be met for three (3) consecutive years to achieve successful condition compliance; and
6. Substantially reduce long-term monitoring requirements.

2.1 Equitable Treatment

In its amendment request, the permittee asserts that the monitoring and oversight provisions of Condition D constitute unfair treatment by the Commission and contends that its proposal to eliminate funding for Commission oversight of this permit and to allow the permittee to conduct its own monitoring with professional contractors would result in equitable treatment for this permittee as compared to other coastal development permit holders. The permittee contends that in the intervening years since the permit was conditioned to require the present mitigation program (1991), the Commission has not required other applicants to similarly pay for independent monitoring of mitigation programs.

The Commission's imposition of Condition D was not based on a supposition that future permittees of large-scale development would be subjected to the same provisions. Rather,

the Commission included permittee funding of the Commission's oversight functions and independent monitoring as a means to effectively and reliably achieve the compensation objectives for the mitigation program. Further, the permittee **endorsed** the independent monitoring requirements of Condition D in 1991, calling the program "innovative", and emphasizing the fact that it would be "uninfluenced by Southern California Edison and its partners".

The permittee claims inequitable treatment by the Commission with respect to the requirement for independent monitoring. The facts are otherwise. Few mitigation projects of similar scope and magnitude have been approved by the Commission since 1991. However, for the few that have, independent monitoring has played a key role: (1) independent monitoring was recommended for Ballona wetland; (2) independent monitoring of physical performance was implemented through a trust fund for Batiquitos Lagoon; and (3) agencies proposing to purchase and restore the Bolsa Chica wetland have also proposed a trust fund for independent monitoring, management, and remediation. Thus, the Commission finds that independent monitoring of large scale mitigation programs is an emerging trend, not an anomaly as the permittee suggests, and that no inequity of permittee treatment exists.

Moreover, contrary to the permittee's assertions, the Commission has required other permittees to reimburse the Coastal Commission for the costs of permit compliance and enforcement (for example, Permit No. A-4-STB-92-16, Point Arguello Partners; Permit E-92-6, Gaviota Marine Terminal). The Commission notes that the requirement that large mitigation projects be subjected to independent monitoring programs is an emerging practice among local governments. Santa Barbara County, for example, requires independent mitigation project monitoring at the permittee's expense for all large energy projects. Additionally, several industrial facilities in San Francisco Bay voluntarily fund an independent regional water quality monitoring program to comply with their NPDES permit requirements.

The SONGS permit is distinguished from other coastal development permit approvals in other important ways as well:

1. **Mitigation after-the-fact**: The potential adverse environmental impacts of proposed developments are typically reviewed, and mitigation measures imposed, **before** the development occurs. In the case of SONGS Units 2 and 3, a permit was granted, and the development—and associated adverse affects on marine resources—occurred first. In doing so, delays in construction estimated by the permittee to cost as much as $1.5 million per week were avoided. However, mitigation was imposed **after-the-fact** by the Coastal Commission in 1991. This sequence is rare, particularly for a project of this magnitude. As a result, the adverse impacts of SONGS Units 2 and 3 operation, which began in 1983 have yet to be mitigated. It has been argued that the true inequity is that

the SONGS owners have received favorable treatment unavailable to other permit holders: lower-bound estimates of shareholder profits on SONGS Units 2 and 3 since 1984 total approximately $3 billion, yet none of SONGS' impacts have been mitigated.[29]

2. **Unusual, complex mitigation program**: The mitigation for the adverse effects of SONGS is unique in other ways. The plant destroys millions of fish and fish larvae and adversely affects a large kelp bed community offshore of San Onofre. The innovative out-of-kind and in-kind compensatory mitigation program required by the Coastal Commission will mitigate these impacts through wetland habitat restoration and construction of an artificial reef. These projects are more complex and subject to greater uncertainty than some of the other projects cited by the permittee as evidence of inequitable treatment. The SONGS mitigation projects are also designed to be adaptively managed through science-based monitoring and oversight, and rely in critical ways upon objective decision-making—a feature which, the Commission notes, the permittee has enthusiastically endorsed previously.

3. **Impact assessment and mitigation recommendations provided by the MRC**: The Commission established a unique process for SONGS. In establishing impacts and evaluating mitigation alternatives, the MRC did the work staff might do on smaller, less complex problems. The 1974 permit provided a unique degree of responsibility to the MRC. The MRC (which included an SCE representative) provided very strong recommendations for independent monitoring.

2.2 Transfer of Permit Compliance Costs from Permittee to Others

The changes proposed by the permittee would severely reduce the Commission's ability to oversee and manage compliance with this permit. The permittee contends that the Commission staff, with input and advice from other agencies, has the capability to review plans and monitoring reports and to make judgments about permit compliance. The Commission does not, in fact, have the necessary staff technical expertise or time to adequately oversee the SONGS mitigation projects and respond to the inevitable problems and changes expected to arise for the wetlands restoration and reef mitigation projects.

Further, under the permittee's amendment proposal, these additional demands on the permanent Commission staff would be borne exclusively by state taxpayers. Since the original permit was granted in 1974, the permanent staff of the Coastal Commission has spent a substantial amount of time monitoring this project. Since the early 1990s,

[29] Source: CPUC Advisory and Compliance Division, March 18, 1997.

Commission staff time devoted to this permit has intensified and it is likely that more regular Commission staff time has already been spent on this project than on any other individual project brought before the Commission.

The permittee also claims in its amendment proposal that without technical consultants, the Commission could instead obtain advice from other resource agencies. While the staff does consult with other resource agencies routinely on many issues, the permittee's proposal is unrealistic. Other public agencies operate under the same financial and staffing constraints faced by the Coastal Commission. Other agencies cannot be expected to provide, in addition to their existing functions, the scientific services necessary to adequately assess the permittee's monitoring results or to provide technical oversight for the Commission's benefit. Moreover, the Commission cannot delegate its responsibility for determining permit compliance to another agency.

For these reasons the Commission finds it cannot accept the permittee's proposal to eliminate permittee funding for technical assistance to the Commission because the proposed changes would leave Commission staff to evaluate permit compliance and the performance of unusually complex wetland and marine mitigation projects without the assistance of qualified technical advisors. The resultant deficit of qualified advisors would adversely affect the Commission's ability to ensure that the permit's objectives are achieved.

2.3 Impartiality of Independent Monitoring

As stated previously, the permittee proposes to eliminate the Commission's scientific consulting staff, to perform its own annual performance evaluations, and both to substitute self-monitoring for independent monitoring **and** to weaken mitigation project performance standards. The permittee also contends that self-monitoring is cheaper than independent monitoring.

The Commission notes that the trend toward independent monitoring of large-scale projects is growing. Awareness has increased that successful mitigation implementation is best ensured where mitigation is evaluated by a qualified, independent entity with no vested interest in the results. An ideal monitoring program would be undertaken by a qualified party interested only in finding accurate answers to the questions posed by a well-prepared mitigation monitoring plan. The permittee, however, in its amendment proposal, seeks not only to eliminate the access of the Commission and its staff to necessary scientific resources, but also to require the Commission to rely on monitoring data collected and interpreted by the permittee. In other words, the permittee proposes to ask **and answer** its own questions about whether the restored wetland has achieved the specified performance standards. Because remediating the mitigation site to achieve these standards could be expensive, there is considerable profit incentive to interpret

monitoring data in a way that precludes the need for remediation, thereby potentially reducing costs by avoiding remediation. The Commission finds that the permittee's proposal to eliminate independent monitoring would severely undermine the Commission's ability to ensure that objective, science-based decision-making guides the optimal implementation and management of the SONGS mitigation program.

At the April 9, 1997 hearing, the permittee suggested (in testimony and in an overhead) that the Commission amend Condition D to eliminate permittee funding of Commission oversight but retain independent monitoring. The permittee suggested that it be responsible for developing the monitoring programs and that it select the monitoring entity for the wetland and kelp reef mitigation projects. The permittee also suggested that the reports prepared by the selected monitoring entity be simultaneously submitted both to the permittee and to the Commission staff. The Commission finds that this proposed amendment of Condition D is inconsistent with the Coastal Act and an unwarranted change. The Commission finds that for monitoring to be truly independent, the monitoring plan must be developed by an entity other than the permittee. In addition, while the permittee can comment on the Commission's choice of independent monitor, the permittee cannot have a vote or any veto power in the final selection of independent monitor.

The Commission finds and the permittee provides no evidence that self-monitoring is cheaper than independent monitoring. In either case, contractors are generally selected on the basis of competitive bids and the cost of conducting the monitoring would depend on the requirements of the monitoring program. On the other hand, the Commission finds that any party whose reputation, business profit or other substantial interests may be adversely affected if a large-scale mitigation program is shown to be under-performing or failing should not be charged with the dual responsibilities of implementing mitigation measures and monitoring/reporting on the performance of these efforts. Therefore, the Commission finds that there is continuing importance in the independent monitoring and technical oversight required by Condition D to ensure full mitigation required under Conditions A and C of this permit.

2.4 Innovative Mitigation Program is Consistent with the Coastal Act

As stated previously, the Commission in past decisions has determined that this permit warrants a distinctive, science-based package of mitigation measures, including independent oversight, monitoring, and objective remediation management. The Marine Review Committee, which included an SCE representative, identified the need for independent project management in 1991. The Commission concurred, and conditioned Coastal Development Permit 6-81-330 in 1991 to incorporate the Condition D administrative structure. The Commission found that permit compliance, consistent with the requirements of the Coastal Act, could best be achieved if the results of independent

monitoring were used to implement any required remediation. As stated in the staff report for CDP 6-81-330, the required mitigation measures are compensatory in nature, and while the benefits of such measures are predicted to offset the identified impacts of SONGS, these benefits are uncertain. The monitoring, technical oversight, and remediation required by Conditions A, C and D address this uncertainty by providing information on the success of mitigation projects, and by providing a mechanism for "adaptive management" of the created resource, i.e., improving the likelihood of success by independent monitoring, and on the basis of the data collected, regularly re-evaluating the management plan and determining necessary remedial steps.

The Commission also notes that the SONGS mitigation package was designed with the permittee's full support. When the Commission imposed the applicable special conditions in 1991, particularly the requirement for independent monitoring, the permittee understood that this was a unique package. The Commission notes that the permittee did not simply **accept** the permit conditions—the permittee **endorsed** these provisions. As Michael Hertel, Edison's Manager of Environmental Affairs, testified to the Commission on July 16, 1991:

> [I] think it is incumbent upon us, as part of our duty and our commitment that we made some seventeen years ago to follow through and implement the recommendations of the staff today. And so we strongly support, strongly support the staff's recommendations to you with respect to mitigation and **especially with respect to the innovative mitigation monitoring which will be completely independent and uninfluenced by Southern California Edison and its partners.** (emphasis added)

The Commission has found in the past that the independent monitoring and technical oversight required by Condition D is necessary to ensure that the development of SONGS Units 2 and 3 is consistent with the Coastal Act. Thus, the Commission finds that to ensure mitigation for the operating life of SONGS Units 2 and 3 as required by the permit, independent monitoring and technical oversight continue to be necessary and the permittee's amendment, which proposes the elimination of these permit features, can therefore not be approved.

3.0 FUNDING OPTION

The Commission finds that the conditions proposed to be amended by the permittee can be revised to include a funding option that allows the permittee to pay a specified amount to have the projects required in Condition A (wetland restoration) and Condition C (kelp reef mitigation), and the independent monitoring and technical oversight required in Sections 1 through 3 of Condition D carried out by third parties. This section presents the Commission's findings in support of the funding option.

3.1 Cost Containment and Conflict Resolution

The Commission finds that offering the permittee an option to fund the cost for implementation, independent monitoring, technical oversight, and remediation of the mitigation projects provides a solution to the permittee's concerns about the open-ended nature of these costs in the 1991 conditions. The permittee's basis, in part, for seeking amendment of the 1991 conditions is to identify and cap costs, resolve condition interpretation disagreements with Commission staff and establish new deadlines for compliance. The Commission finds that the conditions cannot be amended as proposed. However, these concerns underlying the proposed amendment can be addressed by establishment of a fund option. Under the fund option the permittee's outlay of funds at the outset is limited and subsequent outlays are tied to specified milestones. Thus, there are no surprises—the costs are fixed and the permittee's responsibility for Conditions A, C, and D are satisfied when the monies are provided in accordance with the funding option in Condition D.[30]

In addition, the funding option will resolve long standing, costly, time consuming disputes between staff, other resource agencies, and the permittee as to permit interpretation, monitoring, analysis of results, and likely future conflicts over remediation. At the same time, the funding option eliminates the potential conflict of interest that may arise for the permittee if faced with the decision of whether to maximize profits by minimizing mitigation costs or provide full remediation. The SONGS owners have repeatedly expressed concern about the unpredictability and potential escalation of future costs for the marine mitigation program. The Commission has addressed this issue by incorporating into Condition D the option for a ~~$106.51~~ $114.05 million (plus interest) payment for the permittee's entire mitigation responsibilities for Conditions A, Sections 1 and 2 of Condition C and Sections 1 through 3 of Condition D. The Commission finds that through the funding option the objectivity of the Condition D oversight and monitoring structure is retained and that cost certainty is provided to the permittee.

3.2 Balancing the Risk of Fixing the Permittee's Costs

As explained in IV-A, Section 3 above, the permittee now operates SONGS Units 2 and 3 under a new ratemaking paradigm. For the short-term (the next 8 years), SONGS is a relatively protected utility asset. By way of the funding option, the Commission provides the permittee with the means to fix its entire mitigation implementation, monitoring, oversight, and remediation costs for Conditions A, Sections 1 and 2 of Condition C and Sections 1 through 3 of Condition D. In electing the funding option, the permittee gains the

[30] The Commission added a requirement in Condition C for the permittee to pay $3.6 million for a mariculture/fish hatchery program operated by the State (see Condition C, section 3). These hatchery funds are a separate requirement that is not optional and are therefore not included in the funding option in Condition D.

highest possible degree of financial certainty for the SONGS mitigation package. At the same time, since the Commission has carefully and thoroughly estimated the costs of implementing the conditions, the affected resources benefit by the implementation of the most appropriate, feasible mitigation.

On the other hand, as more fully explained elsewhere within these findings, whether the estimated costs will be sufficient to cover the actual costs of project implementation is uncertain. There is an unavoidable risk that the costs of full mitigation through this process will be higher than currently estimated. However, the Commission, by means of the funding option contained in revised Condition D, balances the uncertainty of future mitigation costs with the ability to move forward with the stalled mitigation projects. If remediation costs for the kelp bed and the wetland project site(s) exceed the permittee's payment provided in the funding option for unforeseen reasons, the Commission could not seek additional funds from the permittee in the future. On the other hand, the permittee would no longer have a profit motive to reduce mitigation obligations; thus, the Commission finds that on balance the resources would receive maximum benefits.

3.3 Funding Mechanism

In discussions with the permittee regarding the funding option concept, the permittee indicated that a funding option would be infeasible if it required the permittee to pay the entire cost estimate in one lump sum. The Commission's funding option addresses the permittee's request by allowing the permittee to make partial payments to the Funds established by Implementing Entities in accordance with specified deadlines. After the permittee elects the funding option, the Executive Director will enter into Memoranda of Agreement with the Implementing Entities to establish: (1) Funds into which the permittee will make payments and from which the Implementing Entities will pay project expenditures, (2) the responsibilities and authorities of each party, and (3) the approvals required prior to expenditures of monies in the Funds to ensure that the mitigation projects and monitoring and oversight activities are carried out consistent with the requirements of Conditions A, C and D. After the designated Implementing Entities have created the accounts that will constitute the Funds, the permittee will be required to make scheduled payments into the Funds. The payments are based on when the Implementing Entities will need money to carry out aspects of the condition requirements. The permittee is responsible for paying the interest that would be accrued on the ~~$106.51~~ $114.05 million had the permittee paid the amount in one lump sum upon the election of the funding option.

All of the funds from the permittee's internal accounting will be disbursed to the Implementing Entities not later than December 30, 2003, which coincides with the end of the CPUC settlement period during which the monies will be collected from the ratepayers. The wetland and reef mitigation projects will require large transfers of funds to initiate the

construction phases. The monitoring and oversight activities will require approximately equal distribution of funds over the first five years of the projects. Interest will accrue to the funds to neutralize the effect of inflation during the period in which the funds are held. The interest rate used in the funding option, the 6-month U.S. Treasury bill rate, is a standard governmental rate and is a fair indicator of the effect inflation will have on the current-day cost estimates.

During the process of the October and November 1996 hearings, the permittee made two suggestions[31] concerning interest accruals for the funding option which the Commission finds it cannot accept. First, the permittee stated that the amount of the fund **includes** any and all interest. In other words, while interest would accrue to the funds held by the permittee, the specified total amount would be the **maximum** that the permittee would be liable to pay. The Commission's cost estimate of ~~$106.51~~ $114.05 million is for the actual expected costs if the projects, monitoring and oversight—which span a period of approximately 30 years—were to occur in 1997. There is no "escalator" built into this estimates because it is not possible to accurately determine what economic effects will occur over the next 30 years. The purpose of interest accrual equivalent to the 6-month U.S. Treasury bill rate is to cover the anticipated increase in actual costs due to inflation. Thus, limiting the permittee's total pay-out to today's cost estimate would result in a fund amount that will not cover the actual costs of implementing the condition requirements.

Second, the permittee stated that the index used as the basis for interest accrual should be the annual percentage change in the Gross Domestic Product Implicit Price Deflator determined by the U.S. Department of Commerce, Bureau of Economic Analysis. This index is used in many contracts and in several laws as an escalator to adjust costs or prices from those relevant for one period to those relevant for another period, as is the overall Consumer Price Index. However, when commenting on the funding option the Bureau of Economic Analysis recommended that the Implicit Price Deflator not be used as a measure of price changes because it is unsuitable for this type of project and because it reflects not only changes in prices but also changes in the commodities included in the deflator index.[32]

The funding option also requires the permittee to enter into a letter of credit once the entities who will carry out the mitigation projects are identified. This is necessary because the implementing entities need assurance of funding before they begin major work. If the permittee were to pay the entire fund amount at the time it elects the funding option, the implementing entities would know they have the necessary monies before beginning the planning, permitting, and construction processes. However, to address the permittee's

[31] SONGS Permit Amendment - Alternate Proposal and Conditions, November 4, 1996.
[32] Kurt Kunze, U.S. Department of Commerce, Bureau of Economic Analysis, personal communication, November 12, 1996; and Fact Sheet on Real Measures of GDP and Implicit Price Deflators, U.S. Dept. of Commerce, Bureau of Economic Analysis.

concerns, the funding option allows the permittee to pay the costs of the mitigation projects over time rather than in one lump sum. This has the potential to dissuade otherwise willing entities from seeking to implement the projects because they would be in the position of preparing plans and obtaining permits without knowing for certain that funds for construction would definitely be available. The letter of credit provides the necessary assurance to these entities and thereby insures that the Commission will be able to secure entities to implement the mitigation projects.

3.4 Estimated Costs

Cost estimates for the funding option are for the entire SONGS mitigation package for Conditions A, C, and D (except for the $3.6 million required to be paid for the mariculture/ fish hatchery program) and include: (1) the costs for designing, permitting and constructing a wetland restoration project or projects consistent with the requirements of Condition A, and a kelp reef mitigation project (including an experimental and mitigation reef(s)) consistent with the requirements of Condition C, including costs for any necessary remediation and such additional monitoring or site inspections as may be needed to evaluate the success of the remediation; (2) the costs for technical oversight and review incurred by technical personnel retained by the Executive Director of the Commission to assist in carrying out its oversight of the mitigation and monitoring activities, including costs for public review of the projects; and (3) the costs of planning and implementing the independent monitoring of both the wetland restoration mitigation project (Condition A) and the kelp reef mitigation project (Condition C). (See cost breakdown in Appendix F.)

The staff estimated costs in consultation with the State Coastal Conservancy, California Department of Fish and Game, JPA, University of California, Scientific Advisory Panel, independent consultants, and others, based on their past experience with these types of projects, and using the best information available at this time, including information submitted by the permittee to the CPUC, and professional engineering estimates for San Dieguito Lagoon.[33] The costs are summarized as follows:

Table 33: Funding Option Cost Estimates (in millions)

	Project Implementation	Remediation	Monitoring	Technical Oversight	TOTAL
Wetland Restoration	51.42	4.21	2.50	2.66	60.79
Experimental Reef	2.70	–	2.23	1.72	6.65
Mitigation Reef	~~26.88~~ 32.91	~~6.72~~ 8.23	3.35	2.12	~~39.07~~ 46.61
GRAND TOTAL	**~~$81.0~~ $87.03**	**~~$10.93~~$12.44**	**$8.08**	**$6.50**	**~~$106.51~~$114.05**

[33] Wetland Restoration at San Dieguito Lagoon, Moffatt & Nichol Engineers, March 19, 1997. ~~Wetland Restoration at San Dieguito Lagoon, Plan C~~.

The permittee states its reliance on the MRC and Commission staff's 1989 estimate of $29 million, excluding monitoring costs, for the mitigation projects. These estimates were for construction and land purchase alone; they did not include the costs for planning, permitting, monitoring, technical oversight, and remediation. Further, the estimates were never intended to be precise cost estimates for implementing the mitigation projects, but were meant as a basis for comparing costs of mitigation with alternatives such as constructing cooling towers.

The funding option wetland costs are based on the alternative San Dieguito Lagoon wetland ~~mitigation~~ plan developed by Moffat & Nichol at the request of the State Coastal Conservancy and the San Dieguito River Park Joint Powers Authority (JPA). The San Dieguito plan provides the only sound, compelling basis for the fund valuation for five key reasons. The plan is:

1. Tailored to the site selected by the permittee and approved by the Commission specifically for compliance with the SONGS wetland mitigation requirements;

2. Based on critical, thoughtful input from the Department of Fish and Game, National Marine Fisheries Service, U.S. Fish and Wildlife Service, and other resource agencies;

3. Strongly supported by the primary land owner and manager, the JPA;

4. Benefits from more refined engineering and other technical analyses than any other candidate site; and

5. Achieves efficient permit compliance after years of delay.[34]

The permittee contends that the San Dieguito site is too expensive and may seek permit compliance via an as yet unidentified project at a different site. While the permit provides a process to select a new site, Commission staff scientists have investigated other possible sites and identified significant deficiencies among the possible candidates. When these deficiencies are taken into account, it is apparent that the costs identified for the San Dieguito site are on par with costs that may be anticipated elsewhere. Potential alternative sites have other drawbacks:

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[34]The Commission has reviewed early drafts of the plan and it appears that the plan is likely to meet the Minimum Standards and Objectives of the permit. For instance, the plan includes extensive intertidal and subtidal areas, and results in minimal loss of existing wetlands. The plan also provides maximum overall ecosystem benefits and substantial fish habitat compatible with other wetland values at the site. Although the total number of acres to be substantially restored or created is less than the 150 acres required, an ~~amendment that allows restoration~~ allowance for partial credit for inlet maintenance (as approved~~as proposed in the September 1996 staff report~~ by the Commission in its April 9, 1997 action) could bring the total to 150 acres.

1. The restoration plans of alternative sites (Example: Santa Ana River) are in extremely preliminary states and therefore costs estimates based on such plans may dramatically underestimate likely final costs; and

2. Restoration plans for alternative sites may not meet the SONGS permit requirements. (Example: Huntington Beach Wetlands where little "creation or substantial restoration of wetlands," as required by the SONGS permit, would occur. The plan would primarily result in enhancement of existing wetlands.)

~~One of the most compelling reasons to rely on the San Dieguito Lagoon site costs is that implementation of a viable project at this site is more certain, and based on more reliable data, than any other alternative. To forego this site and substitute less reliable cost data for a lesser known potential project would interject additional doubt about project outcomes and invite unacceptable additional delays.~~ Finally, the San Dieguito Lagoon site is the wetland site that meets the minimum standards and best meets the objectives of Condition A. No other site has been approved by the Commission pursuant to the site selection process. Condition A is being amended to reflect this to insure that the permittee proceeds with developing preliminary and final restoration plans for San Dieguito. Only if completion of the full 150 acres of substantial restoration or creation becomes infeasible at San Dieguito because of hydrology or other engineering concerns can the permittee pursue restoration at an additional site. Thus, the fund that is being established so that the Condition A requirements can be implemented by a third party is to be allocated in accordance with Condition A. The fund monies are to be spent on a wetland project that accomplishes 150 acres of substantial restoration or creation at San Dieguito unless technological feasibility issues require that part of the work occur at another site. Thus, since the restoration project must be carried out at San Dieguito even if it is conducted by a third party, it is appropriate to base the fund amount on the cost to implement the Moffatt & Nichol alternative plan at San Dieguito.

The Commission finds that the costs for the funding option to carry out the requirements of Conditions A, Sections 1 and 2 of Condition C, and Sections 1 through 3 of Condition D have been reasonably estimated by professionals experienced with these types of projects, given the project information available at this time. Nevertheless, the Commission identifies the following limitations on the cost estimates for the funding option contained in Condition D:

1. All cost estimates are in 1997 dollars with no inflation or interest accrual adjustments. The estimates assume that the total amount of the monies required to be paid by the permittee begins to accrue compound interest at U.S. Government Treasury Bill rates upon the permittee's election of the funding option.

2. The cost estimates are based on costs necessary to carry out the wetland restoration and artificial reef mitigation projects and monitoring and technical oversight functions from this point in time. Funds already expended by the permittee or the Commission are not included in the estimates and cannot be deducted from the total amount.

3. The cost estimates are germane only to the funding option, and should not be relied on by the permittee to justify limits to its financial obligation for implementing the permit conditions should the permittee not elect the funding option, or for any other reason.

4.0 COASTAL ACT CONSISTENCY: CONCLUSION

The Commission acknowledges that the performance of large-scale mitigation projects such as wetland restoration and artificial reef construction are subject to a considerable degree of uncertainty. Project performance must be monitored thoroughly and objectively and the results impartially interpreted to guide remediation decisions. The need to make significant mid-stream corrections based on monitoring results is anticipated. The decision of whether to expend resources to perform remediation is, therefore, a function of the interpretation of—and quality of—monitoring results. To ensure adequate remediation, and thereby successful permit compliance, the Commission finds it necessary to protect the objectivity of the monitoring data collection and interpretation.

The Commission concludes that uncertainty is expected, and independent monitoring, oversight, and management are essential to achieve mitigation results consistent with the requirements of Coastal Act Sections 30230, 30231, and 30233. Therefore, the Commission finds that the independent administrative structure set forth in Condition D provides the best means to ensure that the permittee's mitigation program is adequate to mitigate the adverse environmental effects upon marine resources caused by the operation of SONGS Units 2 and 3, consistent with the requirements of Coastal Act Sections 30230, 30331 and 30233.

Further, based on the permittee's own forecasts and the operating record of SONGS, and on the settlement approved by the CPUC (see Background section above), the permittee has already anticipated paying an amount similar to the fund amount to comply with the requirement of the permit. The Commission finds that the costs of permit compliance will not result in increased costs to ratepayers (as explained previously, the ratepayers will pay the cost of SONGS mitigation built into the permittee's settlement with the CPUC, regardless of the outcome of this permit amendment) nor will the costs of permit compliance impair the permittee's ability to profitably operate SONGS Units 2 and 3 now or in the future (as explained previously, savings the permittee realizes on the SONGS mitigation requirements will be retained by the permittee as shareholder profits). Therefore, the Commission finds that the entire SONGS mitigation package, as provided

for in the funding option in revised Condition D constitutes **feasible mitigation** consistent with the definition of feasibility set forth in Coastal Act Section 30108.

V. CEQA FINDINGS FOR RECOMMENDED CONDITIONS

Pursuant to section 21080.5(d)(i) of the California Environmental Quality Act (CEQA) and section 15252(b)(1) of Title 14, California Code of Regulations (CCR), the Commission may not approve a development project "if there are feasible alternatives or feasible mitigation measures available which would substantially lessen any significant adverse impact which the activity may have on the environment." In addition, pursuant to section 21004 of the CEQA and section 15040 of Title 14, CCR, "in mitigating or avoiding a significant effect of a project on the environment, a public agency may exercise only those express or implied powers provided by law other than this division."

For the reasons indicated in the previous sections of these findings, the Commission finds that there are no feasible alternatives or feasible mitigation measures that, within the constraints imposed by applicable legal authority, are available which would substantially lessen any significant adverse impact which the activity may have on the environment, other than those identified herein.

VI. FINDINGS ON PRELIMINARY PLANS FOR COMPLIANCE WITH CONDITIONS A AND C

A. BACKGROUND

The permittee has submitted three mitigation plans along with the proposed amendment, stating that "[t]he mitigation plans are submitted with the amendment request due to the critical interrelationships between the conditions and the mitigation program. The rationale for the requested amendments can be understood only in the context of the plans intended to implement them, thus they must be reviewed and considered together."

Procedurally, however, the submitted plans must be evaluated separately. Separate consideration is required because the permit special conditions must be evaluated relative to the Coastal Act, whereas plans required by a special condition are evaluated relative to that special condition. This section addresses whether the plans comply with condition requirements. The Coastal Commission is not at this time approving a coastal development permit for implementation of each plan. The Commission is simply determining whether the submitted plans comply with the respective condition requirements. For clarity, each plan is discussed separately.

B. DENIAL OF THE SAN DIEGUITO WETLANDS PRELIMINARY PLAN

The permittee submitted a preliminary plan for undertaking wetland mitigation within San Dieguito Lagoon. The preliminary plan is entitled *Preliminary Plan: San Dieguito Wetland Restoration Project*[35] (1996) (hereafter referred to as the "San Dieguito Wetlands Plan"). The San Dieguito Wetland Plan describes a project to create and substantially restore wetland habitat within San Dieguito Lagoon, as well as enhance existing wetland habitat. Enhancement is primarily achieved through maintenance of the lagoon inlet to allow for continual tidal flow through the lagoon (in perpetuity).

Prior to the first hearing on the amendment package the Commission staff reviewed and evaluated the preliminary plan and developed revisions to the plan. Subsequently, the owners and managers of a majority of the land (the San Dieguito River Park Joint Powers Authority or JPA) determined that the preliminary plan did not satisfy the agreement between the permittee and the JPA. The JPA therefore refused to authorize the permittee to carry out the plan at the San Dieguito Lagoon site (see Exhibit 6). Accordingly, the permittee has no authority to implement its preliminary plan at San Dieguito.

The Commission must approve a preliminary plan that can be finalized and eventually implemented. Thus, consideration of a preliminary plan that the permittee has no authority to implement would not be consistent with Condition A. The preliminary plan submitted by the permittee contains some of the elements required by Condition A, and has the potential to eventually be approved by the Commission if revised. However, in the absence of any evidence that the plan can ever be carried out, it would be premature for the Commission to suggest such revisions. Therefore, the Commission rejects the San Dieguito Wetland Plan on the grounds that it does not comply with Condition A.

C. DENIAL OF THE ORMOND BEACH WETLAND SITE

The permittee has proposed to fund restoration of the Ormond Beach wetland according to the South Ormond Beach Wetland Restoration and Management Plan (the "Ormond Plan"). Although Condition A identifies Ormond Beach wetland as one of the sites available for wetland mitigation, the plan as submitted does not contain many of the elements required in a preliminary plan, according to Condition A, Section 1.2, as revised. For example, the submitted plan does not provide a conceptual design that includes proposed grading plans or proposed habitat types. In addition, critical components, such as establishing a tidal connection with Mugu Lagoon, are dealt with in a superficial way. Hydrologic studies to determine if tidal restoration is possible have not been completed,

[35] Submitted by Southern California Edison Company August 16, 1996. In Submittal to Amend and Fulfill Certain Conditions of Coastal Development Permit No. 6-81-330 (SONGS Units 2 & 3); Volume II of III; Section I. 48 pp.

and there are no drawings of where the channel will go, or how much of Ormond Beach would become tidal wetland.

Furthermore, the plan lacks the authority of the U.S. Navy to establish a tidal channel between Ormond Beach wetland and Mugu Lagoon.

For all of these reasons, the Commission rejects the South Ormond Beach Wetland Restoration and Management Plan. Given that the preliminary plan lacks so much detail, the Commission cannot suggest revisions at this time. Furthermore, since the permittee proposed the Ormond Beach Plan in conjunction with the San Dieguito Plan, and because the San Dieguito Plan has been rejected by the Commission, it is unclear whether the permittee intends to proceed with the Ormond Beach Plan. For this additional reason, it is premature for the Commission to suggest revisions.

D. COMPLIANCE OF THE EXPERIMENTAL ARTIFICIAL REEF PRELIMINARY PLAN WITH AMENDED CONDITION C

The permittee submitted a plan for construction of an experimental artificial reef to fulfill Condition C. The plan, entitled *San Onofre Marine Mitigation Program: Experimental Reef for Kelp*[36] (hereafter referred to as the "Experimental Reef Plan"), describes a project to create a 16.8 acre artificial reef to test the design parameters necessary for providing a persistent giant kelp forest and associated ecosystem.

The Commission finds that the Experimental Reef Plan complies with the criteria and standards in amended Condition C, section 1.0 (experimental reef), only if revised. The following revisions are required to ensure the plan complies with Conditions C:

1) The plan shall be revised to include the results of a detailed side-scanning sonar and substrate profile survey necessary to determine the appropriate location and height of hard substrate deposited as part of the experimental reef.

1.0 THE ARTIFICIAL REEF PRELIMINARY PLAN COMPLIES WITH AMENDED CONDITION C

The plan proposes an experimental approach to determine the feasibility of various reef designs, construction materials, and locations near SONGS for the purpose of providing suitable habitat to replace kelp bed resources. The plan is logical in its approach, and covers a wide range of options. Execution of this plan should provide much of the information needed to design a successful mitigation reef that compensates for the kelp

[36] Submitted by Southern California Edison Company August 16, 1996. In Submittal to Amend and Fulfill Certain Conditions of Coastal Development Permit No. 6-81-330 (SONGS Units 2 & 3); Volume II of III; Section J. 12 pp.

bed resources lost due to the operation of SONGS Units 2 and 3 as required by Condition C, as amended.

The Commission finds the Experimental Reef Plan as revised meets many of the site assessment criteria established in Condition C. The Experimental Reef Plan proposes a project that: (1) is located as near as possible to the SOK, and between Dana Point (Orange Co.) and Carlsbad (San Diego Co.); (2) results in minimal disruption of natural reef or cobble habitats and sensitive or rare biotic communities; (3) is located at a depth locally suitable for kelp growth and recruitment; (4) is located near a persistent natural kelp bed; (5) is located away from sites of major sediment deposition; (6) would minimize interference with vessel traffic; (7) is located away from power plant discharges, waste discharges, dredge spoil deposition sites, and activities of the U. S. Marine Corps; and (8) will not interfere with known historic cultural sites. Revision of the plan to include a detailed substrate survey is required to determine if the proposed site contains substrate suitable for the deposition of rock and/or concrete.

ATTACHMENT, EXHIBITS, AND APPENDICES IN SEPARATE PACKAGE

ATTACHMENTS, EXHIBITS, AND APPENDICES

FOR

SONGS PROPOSED REVISED FINDINGS AND CONDITIONS

MAY 14, 1997

Attachment 1	Standard Conditions
Exhibit 1	Location Map
Exhibit 2	Lay-out SONGS
Exhibit 3	Letter from Robert S. Hoffman to Peter Douglas, June 26, 1996
Exhibit 4	Letter from Craig Osenberg to Peter Douglas, October 2, 1996
Exhibit 5	Letter from Paul Dayton to Commissioners, October 8, 1996
Exhibit 6	Letter from JPA to Calcagno and Commissioners, November 12, 1996
Exhibit 7	Correspondence related to the CPUC settlement
Exhibit 8	Letter to SCE from Susan Hansch, January 29, 1997
Exhibit 9	Letter from SCE to Susan Hansch, February 14, 1997
Appendix A	Substantive File Documents
Appendix B	1991 Coastal Permit 6-81-330 (Formerly 183-73) Text of Originally Approved Special Conditions A–F
Appendix C	Permittee's Proposed Amendments to Conditions A, C, & D
Appendix D	An Updated Estimate of the Extent of SONGS' Impact on Giant Kelp Based on New Information
Appendix E	SONGS CPUC Settlement Calculations
Appendix F	Cost Estimates Used in Funding
Appendix G	Supplemental Analyses

ATTACHMENT 1 — STANDARD CONDITIONS

CDP NO. 6-81-330-A

1. **Notice of Receipt and Acknowledgment.** The permit is not valid and development shall not commence until a copy of the permit, signed by the permittee or authorized agent, acknowledging receipt of the permit and acceptance of the terms and conditions, is returned to the Commission office.

2. **Expiration.** If development has not commenced, the permit will expire two years from the date this permit is reported to the Commission. Development shall be pursued in a diligent manner and completed in a reasonable period of time. Application for extension of the permit must be made prior to the expiration date.

3. **Compliance.** All development must occur in strict compliance with the proposal as set forth in the application for permit, subject to any special conditions set forth below. Any deviation from the approved plans must be reviewed and approved by the staff and may require Commission approval.

4. **Interpretation.** Any questions of intent or interpretation of any condition will be resolved by the Executive Director or the Commission.

5. **Inspections.** The Commission staff shall be allowed to inspect the site and the development during construction, subject to 24-hour advance notice.

6. **Assignment.** The permit may be assigned to any qualified person, provided assignee files with the Commission an affidavit accepting all terms and conditions of the permit.

7. **Terms and Conditions Run with the Land.** These terms and conditions shall be perpetual, and it is the intention of the Commission and the permittee to bind all future owners and possessors of the subject property to the terms and conditions.

Exhibit 1

Location Map

(One page)

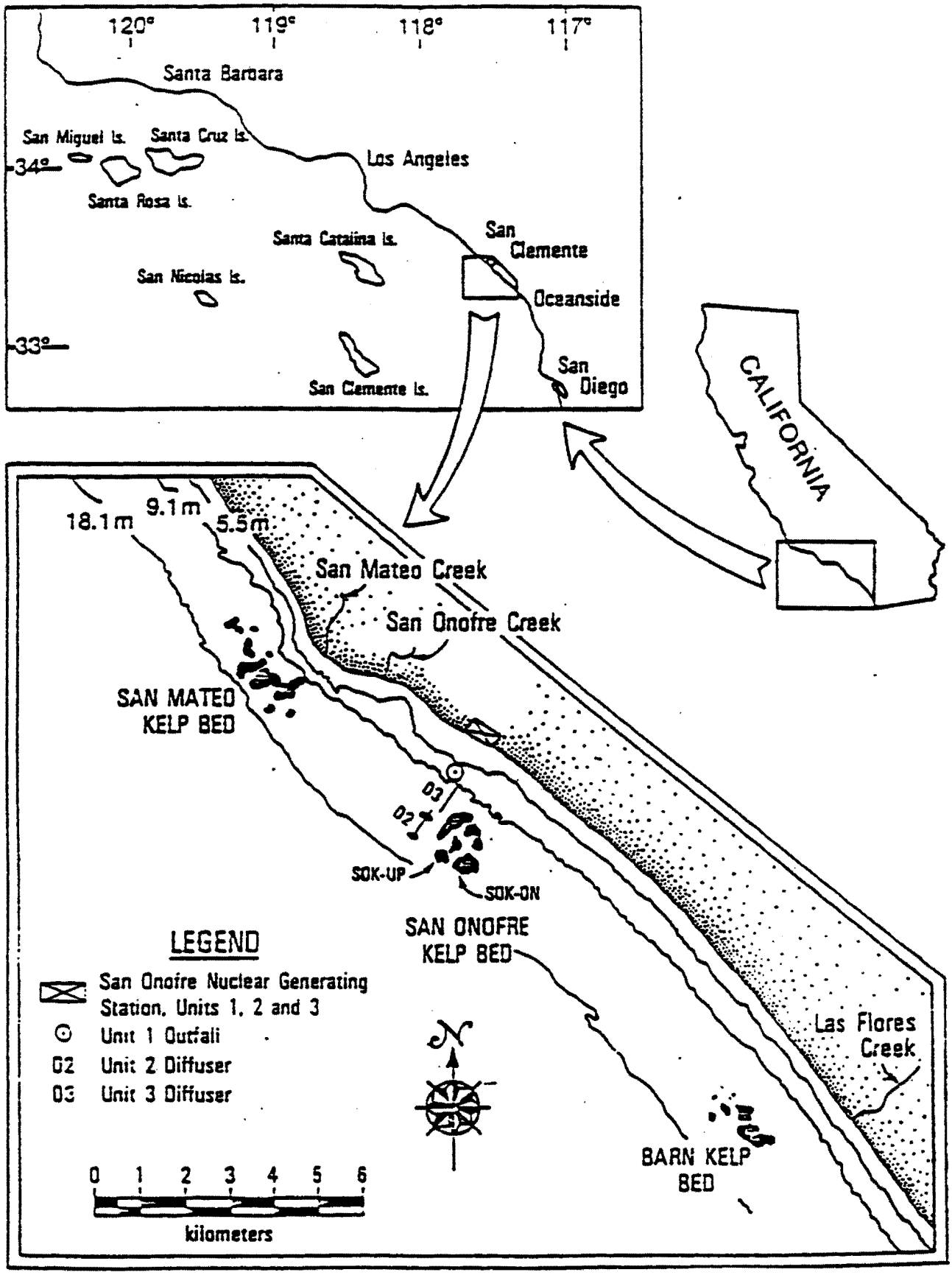

EXHIBIT NO. 1 Map of San Onofre Area

Source: MRC Final Report 1989, p. 38.

Exhibit 2

Lay-out SONGS

(One page)

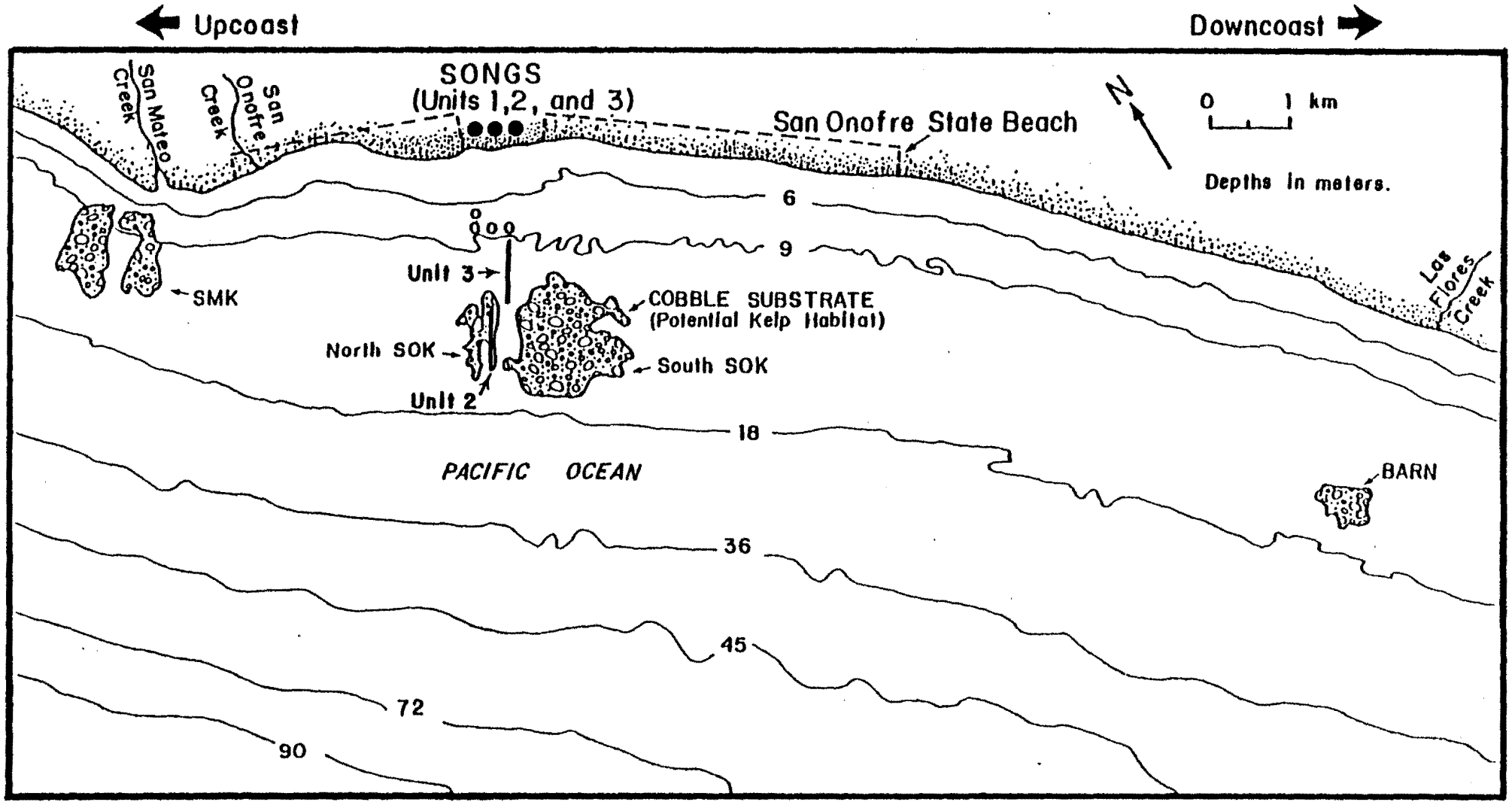

EXHIBIT NO. 2 Layout of SONGS intakes and diffusers relative to the shore and the cobble beds that provide kelp habitat.

ooo = UNITS 1,2,& 3 INTAKES
o = UNIT 1 DISCHARGE
—— = DIFFUSER LINES

Source: MRC Final Report 1989, p. 84.

Exhibit 3

Letter from Robert Hoffman to P. Douglas, June 26, 1996

(Two pages)

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southwest Region
501 West Ocean Boulevard, Suite 4200
Long Beach, California 90802-4213
TEL (310) 980-4000; FAX (310) 980-4018

JUN 26 1996

F/SWO21:RSH

RECEIVED
JUL 11 1996
CALIFORNIA
COASTAL COMMISSION

Mr. Peter Douglas
Executive Director
California Coastal Commission
45 Fremont St., 20th Floor
San Francisco, California 94105

Dear Mr. Douglas:

As you are aware, there have been a series of meetings to attempt to reach a consensus on the issue as to how much "credit" should be given to Southern California Edison Company (SCE) for maintaining an open mouth at San Dieguito Lagoon relative to the 150-acre wetland restoration requirement. Since agreement could not be reached between SCE and California Coastal Commission (CCC) staff on this issue, the Interagency Wetlands Advisory Panel (IWAP) was requested to provide an independent recommendation regarding what "credit" would be appropriate.

On behalf of the IWAP, I have agreed to summarize the position of the Panel on this issue.

On June 12, 1996, the IWAP met with the intent to reach consensus among the Panel members on this "credit" issue utilizing a combination of all information provided as of that date, as well as best professional judgement. Those IWAP members that were present included myself, Jack Fancher (U.S. Fish and Wildlife Service), David Zoutendyk (Corps of Engineers), Richard Nitsos (California Department of Fish and Game), Tim Dillingham (California Department of Fish and Game, Troy Kelly (California Department of Fish and Game), Joanne Kerbavaz (Tijuana River National Estuarine Research Reserve), and Diane Coombs (Joint Powers Authority, San Dieguito River Valley Regional Open Space Park). It should be noted that Diane Coombs acted only as an observer and did not participate in assigning a numeric value relative to the enhancement credit issue.

After extensive discussions, the IWAP agreed that each of the five represented agencies would be allowed one vote or opinion relative to the percent enhancement that would occur to the existing wetland with maintenance of an open mouth condition. The range of values varied among the five agencies from 27.1 to 28.6 percent. The IWAP further agreed that the mean value of the five opinions would serve as the official recommendation from the IWAP. That value is 28.1 percent.

In addition, the IWAP also believes the recommended enhancement credit of 28.1 percent is applicable only with the adoption of the following five conditions:

1) The area of enhancement is limited to those areas at or below the Mean High Water level.

2) The area of enhancement excludes any property owned by the California Department of Fish and Game (CDFG). CDFG property may be used if an agreement has been reached with CDFG which includes compensation for the use of a public trust resource (State property) for mitigation purposes. CDFG is not obligated to allow the use of public trust resources for mitigation purposes.

3) An open mouth condition is defined as a minimum 40-foot channel from the railroad bridge to the ocean, a bottom contour that does not rise above 0 feet at Mean Lower Low Water (MLLW) throughout the channel length, and a closure event (i.e., bottom elevation above 0 feet MLLW) that does not exceed 48 hours.

4) SCE shall complete, prior to or concurrent with implementation of the Lagoon mouth opening, an overall enhancement project at San Dieguito Lagoon similar to that depicted in the Submittal to Amend and Fulfill Conditions to Coastal Development Permit No. 6-81-330 (SONGS Units 2 and 3), Figure 2., dated September 11, 1995.

5) SCE shall pursue all feasible and appropriate restoration options at San Dieguito Lagoon to fulfill the 150-acre wetland restoration requirement before a concerted effort is given to considering enhancement/restoration alternatives at other sites.

While the process to reach a recommendation has been difficult given the limited biological information available for San Dieguito Lagoon, the IWAP believe the recommendations described above provide for an equitable solution to determining the enhancement value for maintaining an open mouth. We urge you to adopt our recommendation and now focus on the timely implementation of an appropriate project at San Dieguito Lagoon.

Should you have any questions regarding our recommendations, please contact me or any other member of the IWAP.

Sincerely,

Robert S. Hoffman

Robert S. Hoffman
Southern Area Environmental
Coordinator

EXHIBIT NO. 3

Exhibit 4

Letter from C. Osenberg to P. Douglas, October 2, 1996

(Six pages)

UNIVERSITY OF FLORIDA
GAINESVILLE, FL 32611

DEPARTMENT OF ZOOLOGY
223 BARTRAM HALL
904/392-1107

2 October 1996

Peter M. Douglas, Executive Director
California Coastal Commission
45 Fremont St., Suite 2000
San Francisco, CA 94105-2219

Re: Proposed amendments for SONGS, and Use of the Independent Panel's Report

Dear Mr. Douglas and members of the Commission,

I served as a member of the Independent Technical Review Panel that reviewed Dean and Deysher's (1996) and Jahn et al.'s (1996) reports on the impacts of SONGS on kelp. During the Panel's deliberations, we all expressed concern about how our findings would ultimately be used by the parties involved in this issue. Indeed, I feel quite strongly that although the Panel's charge was executed several months ago, we have an ongoing duty to ensure that our recommendations were interpreted correctly and applied responsibly. To that end, I would like to offer some observations regarding the ways in which our report has been used by both the CCC Staff and Southern California Edison (SCE). My response is based on evaluation of several sources: 1) a 26 September 1996 press release from SCE entitled "Edison Challenges Coastal Commission Staff Recommendations for San Onofre Environmental Mitigation"; 2) documents (Tab F & G) included as part of SCE's "Submittal to Amend and Fulfill Certain Conditions of Coastal Development Permit No. 6-81-330"; and 3) Appendix C of the CCC's "Staff Recommendation Permit Amendment and Condition Compliance" (for Permit No. 6-81-330-A). I will restrict my comments to issues related to the Dean and Deysher study and our evaluation of that study because the Jahn et al. study is largely irrelevant to the issues at hand.

I elaborate my evaluations below under two broad headings, *Misrepresentations of the Panel's Report* and *Re-analyses*, which can be summarized in four key points:

- The SCE press release and the Amendment Request contain selective citations of our report, which paint an inaccurate picture of our findings and those of the two original SCE reports. There are also comments in these documents that are potentially misleading and misrepresent the goals and approaches embodied by the BACIP assessment design, upon which the kelp studies were based.
- The Panel clearly expressed the opinion that re-analyses were necessary in order to ascertain probable levels of the impacts of SONGS on kelp, and that the integrity of the datasets needed to be evaluated prior to these analyses. To the best of my knowledge, the only attempts to re-analyze these data and use the re-analyses to re-evaluate kelp losses and mitigation requirements were those conducted by the CCC Staff.

EQUAL EMPLOYMENT OPPORTUNITY AFFIRMATIVE ACTION EMPLOYER

- The CCC Staff's re-analyses were performed in a manner generally consistent with the recommendations of the Panel. I have reviewed their report and found that it was relatively balanced and embraced most of the Panel's recommendations.
- As a result, I encourage the Commission to support the analyses presented in the CCC Staff report, which presents a valuable and scientifically sound approach to the estimation of the impacts of SONGS on kelp.

Misrepresentation of the Panel's Report

While writing the final report, we hoped that readers would embrace the entire report, rather than extract specific statements that could be used to support a particular view, while ignoring statements that detracted from that view. Unfortunately, SCE (e.g., in Tab G of the amendment package) overlooked the criticisms we had of the Dean and Deysher report (and the Jahn et al. report). To illustrate, the Panel pointed out that we were concerned about the integrity of the data reported in, and used by, Dean and Deysher. Nowhere is this acknowledged, nor is there any indication that quality assurance controls were subsequently implemented. We also rejected several specific analyses or analytic approaches used by Dean and Deysher. Yet, following our report, SCE (in Tab G: e.g., page 33) continued to use the smallest estimate of kelp loss reported by Dean and Deysher (i.e., 48 acres) and even argued that this was an underestimate. However, this estimate was based on an analytical approach that the Panel criticized, and it probably *under*estimated the impacts of SONGS because of the inappropriate way in which hard substrate was treated (Panel Report Page 2; see also Attachment A to this letter). If instead, you use the analysis from Dean and Deysher's report that best matches the recommendation of the Panel (i.e., side-scanning sonar not corrected for hard substrate), then the estimate of kelp loss is 44 ha, or 110 acres (Table 3 of Dean and Deysher). This is in very close agreement with the estimate provided by the CCC Staff's re-analysis (~122 acres: Page 130). The remaining discrepancy between the two estimates is probably due to the fact that this particular estimate from Dean and Deysher ignored the effects of urchins. The Panel questioned this approach and even Dean and Deysher acknowledged concern and made a subsequent adjustment to deal with the observed outbreak of urchins at SMK. Interestingly, the data from Dean and Deysher's report that best match the recommendations of the Panel are 2.3x greater than what SCE cites from the report (and this estimate is still an underestimate because it ignores urchin effects). This is especially disconcerting because SCE's assertions were made after receiving the Panel's recommendations. This does not appear to be a good faith effort to "ensure that mitigation is fair, commensurate with the plant's impact, and based on sound science" (Dr. Michael M. Hertel, SCE's environmental affairs manager, as quoted in SCE's press release).

Interestingly, the SCE press release also quotes Dr. Hertel as saying "If the impact of SONGS is much less than predicted [a point on which all parties, SCE, CCC Staff, and the Panel, agree], the mitigation should be proportionately less" [insertion added]. This seems to be a reasonable assertion, which if strictly adhered to leads to the following logic: given that SCE agreed to an original mitigation of a 300 acre reef (for a 200 acre impact estimate), then the revised mitigation, using Hertel's "proportional adjustment", should be on the order of a 180 acre reef (for a 120 acre impact estimate: i.e., 300:200 = 180:120).

The BACIP assessment design is central to most of the SONGS studies, including the kelp studies conducted by the MRC and Dean and Deysher. Surprisingly, the SCE material contains several misrepresentations of the goals and approach of the BACIP design. The fact that these misrepresentations are sometimes attributed to SCE scientists, who should be familiar with the BACIP design, is particularly disturbing. For example, the SCE press release quotes Frank Melone as saying "The San Onofre Kelp bed is still a large, productive kelp bed, and it has fared about as well as other kelp beds in recent years. People go there to fish. Fish and other animals still go there to live." This suggests that only the most extreme environmental impact (e.g., complete destruction of the local fisheries) could be considered an "impact". In fact, the observation that SOK still contains fish and has kelp abundance comparable to the pre-operational period, completely misses the elegance of the BACIPS design. The more appropriate conclusion is that the available data suggest that *even more* kelp and *even more* fish would be present at SOK if SONGS Units 2 and 3 had not gone into operation. Consider a simple illustration of the BACIP approach:

> Assume SOK averaged 100 ha of kelp Before SONGS operation, but only 50 ha After. None of the MRC/CCC/SCE scientists would conclude that this represents a decline of 50 ha due to SONGS operation. Why? Because there is no contemporaneous control for large scale changes driven by processes unrelated to SONGS (e.g., El Niño events). That's why a control kelp bed (i.e., SMK) was monitored. If SMK also incurred a 50% reduction over the same time period, then there would be no evidence supporting the hypothesis that SONGS had an impact on kelp: the conclusion would be that SOK (and SMK) declined in response to large scale processes unrelated to SONGS. SONGS would have been exonerated despite a decline in SOK.
>
> By a similar argument, the lack of a decline in SOK cannot, on its own, be taken as evidence that there has been no impact because kelp coverage might have remained the same despite a general increase in kelp regionally (e.g., at SMK). For example, say that SOK averaged 100 ha of kelp Before *and After* SONGS operation, but that SMK doubled in size from Before to After. In this case, the BACIP analysis would predict that, in the absence of SONGS, SOK should have also doubled in size (i.e., increased from 100 to 200 ha). Instead the observed size of SOK, in this scenario, was only 100 ha, leading to the justifiable conclusion that the impact of SONGS was to restrain the expansion of SOK by 100 ha: i.e., SOK would have been 100 ha larger than observed if SONGS had not been in operation. This illustrates the fallacy of the inference suggested in Melone's quotation.

Finally, the Panel noted that "kelp at SOK (relative to SMK) is approaching pre-operational levels....[but that the long-term response is...] still uncertain from the empirical results". This referred to an apparent trend in the data showing a declining impact through time, but because of the uncertainty about the long-term trend and specific adjustments for hard-substrate and urchin effects, we never said that the impact had "disappeared". Indeed, the available data do not appear to support that interpretation. Even if they did, the assertion that mitigation is largely unnecessary completely ignores the substantial impacts that were accumulated over the period from 1984-1995. These effects, especially during the period 1984-1987 were quite large and were not disputed in the Dean and Deysher report. The appropriate analysis should not focus on estimating the effect today (or at any single point in time), but rather must focus on the effects over time, yielding a measure of the cumulative, or time-integrated, or average effect (as in the CCC Staff report).

Re-analyses

The Panel clearly articulated the need for re-analyses, and exploration of the effect of different assumptions on the estimation of kelp losses: e.g., due to urchin grazing. Based on the available documents, it appears that SCE did not attempt to perform any re-analyses (and as pointed out above, was rather selective in their use of the previous analyses). The only re-analysis of the kelp data that I have seen is the CCC Staff's report (Appendix C), which followed most of the Panel's recommendations. In particular, the CCC Staff: 1) estimated losses using ratios of means (rather than means of ratios); 2) focused their analyses on kelp abundance, rather than standardizing for hard substrate area (doing so would have ignored impacts of SONGS on hard substrate area, which appears to be substantial); 3) examined the temporal trends by calculating the running average of the losses and examining its behavior through time; and 4) used the side-scanning sonar data (which provides a longer time series than the down-looking sonar). These approaches were all suggested or implied by the Panel's report. The CCC Staff also: 5) corrected for sea urchin effects using the approach of Dean and Deysher; 6) did not attempt to estimate confidence intervals on the estimates; and 7) in addition to the estimates based directly on kelp abundance (see 2), they also estimated kelp losses by standardizing for hard-substrate area. Item 5) was only one possible solution, whereas the Panel suggested exploration of a range of assumptions. Items 6 and 7 were inconsistent with the Panel's recommendations. However, in all three cases (items 5-7), the approach taken by the CCC Staff was largely conservative (i.e., the estimated losses and resulting mitigation were probably lower than would have been obtained using other reasonable approaches). These last three items are explained in more detail in Attachment A accompanying this letter.

Despite these latter three concerns (which primarily led the CCC Staff to underestimate the likely effects of SONGS), I wish to reiterate that their overall approach was very much in accord with the recommendations of the Panel. Their re-analyses were thorough and fair and appeared to be aimed at obtaining a scientifically defensible estimate based upon the Panel's recommendations.

Thank you for your time. I appreciated the opportunity to serve as a member of the Panel, and I value the chance to provide you feedback on how the Panel's report has been applied. I recognize the importance of this matter to the Commission, SCE and the people of California, and hope only to see that the best possible science is available to help you with your decision. If I can be of any further assistance, please do not hesitate to contact me.

Sincerely,

Craig W. Osenberg
Assistant Professor
Phone: 352-392-9201
Fax: 352-392-3704
E-mail: osenberg@zoo.ufl.edu

ATTACHMENT A: Elaboration on CCC Staff approaches that were not consistent with Panel recommendations:

Adjustment for sea urchins. The Panel noted that it was important to explore the effect of various adjustments for the effects of sea urchins on kelp abundance. Dean and Deysher chose one particular adjustment, which was adopted by the CCC Staff. Other plausible and more extreme adjustments could be justified, which would have led to greater estimated losses. A more thorough analysis of the sensitivity of the estimates would have allowed specification of how much the estimates might change in response to changes in the assumptions.

Lack of confidence intervals. Although the Panel recommended estimation of confidence intervals, and although confidence intervals (in addition to a point estimate of the impact) can be useful in making policy decisions, the Panel acknowledged that calculation of the confidence intervals would be problematic given the nature of the data. While, I would have liked to have seen confidence intervals, I think this is a very minor limitation of the Staff report (neither the MRC or Dean and Deysher provided confidence intervals on their estimates).

Standardization for hard substrate (cobble area). In their section on "Effects of Alternative Assumptions", the CCC Staff standardized kelp abundance by substrate available. This appears, in part, to have been motivated as a compromise between their main approach (as advocated by the Panel) and the approach used by Dean and Deysher (and the original MRC reports). As the Panel pointed out, the standardization can greatly underestimate kelp losses if hard substrate availability was affected by SONGS and this hard substrate is needed to support kelp. To illustrate, consider the following simple example giving the average abundances of kelp and cobble at SOK and SMK (for simplicity, ignore sampling error):

	SOK		SMK	
	Before	After	Before	After
Kelp Area	100	50	50	100
Cobble Area	200	100	100	200
Kelp/Cobbl	0.5	0.5	0.5	0.5

In this scenario, there is a significant decline of cobble at SOK (relative to SMK) from the Before to After periods: i.e., assuming a multiplicative model, the loss is 300 units (SOK is predicted to have increased from 200 units of cobble to 400 (i.e., SMK doubled), but only had 100 units in the After period: predicted - observed = 400 - 100 = 300). Likewise the impact on kelp is estimated to be 150 units (the predicted abundance of kelp at SOK is 200, but only 50 units were observed). Notice that because 50% of hard substrate is occupied by kelp, the two estimates give the same answer (i.e., a 300 unit loss of cobble is the same as a 150 unit loss of kelp: 300x50% = 150). In contrast, the analysis using the standardized kelp area (kelp area per cobble area) gives a result of "no effect" (SOK and SMK both remain constant at 0.5 from Before to After). Thus, the true impact of SONGS is completely missed. This illustrates one limitation of the original MRC analyses, the Dean and Deysher analysis, and this one re-analysis of the CCC Staff. Because hard substrate accrued at SMK, but was lost at SOK (Dean and Deysher, Appendix C), this yields an underestimation of the probable effect of SONGS on kelp. As the Panel pointed out,

this is probably the reason that Dean and Deysher (and the CCC Staff) found that the down-looking sonar (standardized for cobble) yielded smaller impacts that the analyses based on the side-scan sonar (not standardized): see Figure 6 of Dean and Deysher, and pages 129-130 of the CCC Staff report). Indeed the CCC Staff report bears this out: the estimate using down-looking sonar without standardizing for cobble was 178 acres, while the standardized estimate was 55 acres. This latter estimate ignores the loss of hard substrate at SOK relative to SMK. Thus, while the CCC Staff's attempt was thorough, the estimate based on hard substrate standardization should not be considered further (this is in keeping with the recommendation of the Panel).

Exhibit 5

Letter from P. Dayton to Commissioners, October 8, 1996

(One page)

Date: Tue, 8 Oct 1996 12:04:32 -0700 (PDT)
X-Sender: pdayton@popmail.ucsd.edu
Mime-Version: 1.0
To: Susan_Jordan@newscom.com
From: pdayton@ucsd.edu (Paul Dayton)
Subject: I added one word and one comma

Attention Susan Jordan

Susan, these are the comments that I dictated to you on the phone. I believe that they are correct.

Received at Commission Meeting
OCT - 8 1996

>To the Coastal Commissioners
>California Coastal Commission
>
>Dear Commissioners,
>
>I am in substantial agreement with the views expressed in Craig Osenbeck's
>letter to the Coastal Commission, dated October 2, 1996, and feel that
>Southern California Edison (SCE) has selectively edited the findings in our
>report to minimize the mitigations they may be required to do to offset the
>impacts of SONGS, and they appear to have selectively used the data in the
>Dean and Deysher report as well.
>
>The Coastal Commission staff report appears to me to be a well-balanced
>compromise.
>
>
>Sincerely,
>
> Paul Dayton
>Paul K. Dayton,
Professor of Marine Ecology, and
Member, Independent Review Panel

Exhibit 6

Letter from JPA to Calcagno and Commissioners, November 12, 1996

(Four pages)

San Dieguito River Valley
Regional Open Space Park
1500 State St., Suite 280
San Diego, CA 92101
(619) 235-5445 Fax (619) 235-4323

November 12, 1996

JOINT POWERS AUTHORITY
BOARD OF DIRECTORS

Chair Jerry Harmon
Councilmember
City of Escondido

Vice Chair Harry Mathis
Councilmember
City of San Diego

Mark Whitehead
Deputy Mayor
City of Del Mar

Susan Callery
Councilmember
City of Poway

Barbara Warden
Councilmember
City of San Diego

Marion Dodson
Mayor
City of Solana Beach

Dianne Jacob
Supervisor
County of San Diego

Pam Slater
Supervisor
County of San Diego

Dr. Philip Pryde
Chair
Citizens Advisory Committee

Diane Barlow Coombs
Executive Director

CHAIRMAN CALCAGNO AND COMMISSIONERS:

I AM COUNTY SUPERVISOR PAM SLATER. MY DISTRICT INCLUDES THE WESTERN END OF THE SAN DIEGUITO RIVER VALLEY, MUCH OF NORTH SAN DIEGO COUNTY AND ALL OF THE SAN DIEGUITO LAGOON AREA. I HAVE SERVED AS ONE OF THE COUNTY REPRESENTATIVES TO THE SAN DIEGUITO RIVER PARK JOINT POWERS AUTHORITY FOR 4 YEARS AND I AM SPEAKING TODAY AT THE REQUEST OF THE JPA BOARD OF DIRECTORS AS THEIR REPRESENTATIVE.

I SINCERELY WANT TO THANK ALL OF YOU FOR CONTINUING THIS VERY COMPLEX ITEM FROM YOUR OCTOBER MEETING TO THIS HEARING IN SAN DIEGO TODAY.

THE SAN DIEGUITO RIVER PARK JPA WAS FORMED IN 1989 TO PLAN AND IMPLEMENT A 55 MILE OPEN SPACE PARK FROM THE COAST IN DEL MAR TO THE VOLCAN MOUNTAINS NORTH OF JULIAN. THE JPA IS COMPRISED OF ALL CITIES IN THE PARK PLANNING AREA (DEL MAR, ESCONDIDO, POWAY, SAN DIEGO, SOLANA BEACH) AND THE COUNTY OF SAN DIEGO. RESTORATION AND PRESERVATION OF THE SAN DIEGUITO LAGOON IS AND HAS BEEN SINCE THE BEGINNING, A KEY GOAL OF THE JPA AND ONE OF THE REASONS THE JPA WAS FORMED. FOR THOSE OF YOU WHO ARE NOT FAMILIAR WITH THE AREA, WE HAVE A FEW SLIDES:

A. THE AREA WEST OF I-5 AS IT LOOKED BEFORE THE FIRST RESTORATION PROJECT COMPLETED IN THE MID 80'S

B. OVERVIEW OF RESTORED WETLANDS WEST OF I-5 AND SEASONAL WETLAND EAST OF I-5

C. A CLOSER LOOK AT THE WETLANDS RESTORED IN A COOPERATIVE EFFORT BY THE DEPARTMENT OF FISH & GAME, WILDLIFE CONSERVATION BOARD, COASTAL CONSERVANCY AND THE CITIES OF DEL MAR AND SAN DIEGO

D. A SECOND VIEW FROM THE SOUTH

E. THE MOUTH OF THE LAGOON AS THE RIVER MEETS THE OCEAN

F. A CONCEPTUAL RESTORATION PLAN PREPARED FOR THE CITY OF DEL MAR IN 1989

THE JPA HAS ALREADY EXPENDED $8,000,000 FOR THE ACQUISITION OF APPROXIMATELY 200 ACRES IN THE LAGOON PLANNING AREA FOR RESTORATION PURPOSES.

WE HAVE NEGOTIATED AND SIGNED TWO AGREEMENTS (MOA'S) WITH SOUTHERN CALIFORNIA EDISON (SCE) REGARDING RESTORATION OF THE AREA. THE FIRST AGREEMENT SIGNED IN AUGUST 1991, SET FORTH THE CONDITIONS UNDER WHICH SCE COULD USE THE 89 ACRE JPA AIRFIELD PROPERTY ALONG WITH THE 89 ACRE HORSEWORLD PROPERTY TO BE ACQUIRED BY SCE TO IMPLEMENT THE 150 ACRE RESTORATION PROJECT REQUIRED BY THE 1991 COASTAL COMMISSION PERMIT. THIS MOA GIVES THE JPA THE RIGHT TO APPROVE THE SCE PLAN AND FIND THAT IT IS CONSISTENT WITH THE RESTORATION PLAN FOR THE RIVER PARK. IT FURTHER REQUIRES SCE TO "MANAGE, INCLUDING MONITORING AND MAINTAINING, THE RESTORED WETLANDS FOR A PERIOD DETERMINED BY THE COASTAL COMMISSION. SUCH PERIOD SHALL BE FOR A MINIMUM OF 20 YEARS FROM THE COMPLETION OF THE RESTORATION, OR THE OPERATING LIFE OF UNITS 2 AND 3, WHICHEVER IS LONGER."

IN 1994 A SECOND MOA WAS APPROVED BY BOTH THE JPA AND SCE. IT PROVIDES FOR THE JPA TO SERVE AS LEAD AGENCY FOR CEQA AND THE U.S. FISH AND WILDLIFE SERVICE AS LEAD FOR NEPA COMPLIANCE.

THE JPA HAS ALSO ENTERED INTO AN AGREEMENT WITH EARTH ISLAND INSTITUTE REGARDING AN ADDITIONAL $7,500,000 SCE WILL EXPEND FOR RESTORATION IN SAN DIEGUITO BEYOND THE 150 ACRES REQUIRED BY THE 1991 PERMIT.

THE JPA ACTIVELY SUPPORTED THE SELECTION OF THE SAN DIEGUITO SITE FOR MITIGATION OF THE FISHERY IMPACT OF SAN ONOFRE UNITS 2 AND 3 AND WORKED WITH SCE, THEIR CONSULTANTS, RESOURCES AGENCIES, LOCAL AGENCIES AND CITIZENS IN THE PLANNING PROCESS WHICH BEGAN IN JULY 1992. WE HAVE PARTICIPATED IN NUMEROUS PUBLIC WORKSHOPS AND WORKING GROUP AND AGENCY MEETINGS AND WE HAVE SERVED AS FOCUS FOR PUBLIC SUPPORT OF WETLAND RESTORATION AS WELL AS ACTIVELY PROMOTING AND FACILITATING THE

PLANNING EFFORT. THESE ACTIVITIES WERE UNDERTAKEN IN RELIANCE ON YOUR COMMISSION'S APPROVAL OF THE 150 ACRE PROJECT AT SAN DIEGUITO.

THE JPA IS CONVINCED THAT THE ORIGINALLY APPROVED 150 ACRE PROJECT AT SAN DIEGUITO IS THE BEST PROJECT POSSIBLE, THAT IT MEETS THE PERMITS CONDITIONS, STRESSES FISHERY IMPACTS, REMAINS FEASIBLE AND THAT ADEQUATE FUNDING IS AVAILABLE FOR IMPLEMENTATION. THE JPA CANNOT SUPPORT ANY REDUCTION IN THE SCOPE OF THE PROJECT AT SAN DIEGUITO. WE BELIEVE IT IS CRITICAL THAT WE MOVE FORWARD WITH THE CEQA/NEPA REVIEW PROCESS. FEASIBILITY OF A RANGE OF ALTERNATIVES WILL BE ADDRESSED IN THESE STUDIES AS REQUIRED BY LAW. THE PRELIMINARY STUDIES THAT HAVE BEEN COMPLETED TO DATE CONFIRM THAT A 150 ACRE PROJECT APPEARS FEASIBLE AT SAN DIEGUITO PROVIDED THAT APPROPRIATE INFRASTRUCTURE IS INCLUDED IN THE PROJECT.

WE CANNOT SUPPORT THE WHOLESALE REWRITE OF THE 1991 PERMIT. THE PLANS BEFORE YOUR COMMISSION TODAY, BOTH THE SCE AND THE STAFF PROPOSALS DO NOT MEET THE CONDITIONS OF THE MOA AND THEREFORE, SCE HAS NO PERMISSION TO USE THE JPA PROPERTY FOR A REDUCED SCOPE PROJECT. THE JPA WILL EXERCISE ITS RIGHT UNDER THE MOA WITH SCE TO <u>DISAPPROVE</u> THE SCE PLAN FOR USE OF OUR PROPERTY.

IN THE SPIRIT OF COMPROMISE, HOWEVER; THE JPA WILL WORK WITH OTHERS TO FORMULATE THE FOLLOWING AMENDMENTS TO THE EXISTING 1991 PERMIT:

A. DESIGNATE "MODIFIED ALTERNATIVE A" AS THE PROPOSED OVERALL PROJECT WITH ALTERNATIVE A AS THE EDISON PORTION

B. A TRUST FUND OPTION PROVIDED THE FUNDS ARE ADEQUATE AND RESTRICTED FOR USE AT SAN DIEGUITO

C. AMENDMENTS TO MONITORING REQUIREMENTS SIMILAR TO THOSE AT BATIQUITOS

D. THIRTY-FIVE ACRES CREDIT FOR KEEPING THE INLET OPEN IN PERPETUITY

A DEAL WAS MADE IN 1991 AND IT SHOULD BE HONORED. THE JPA POSITION IS SUPPORTED BY A BROAD SPECTRUM OF ORGANIZATIONS AND INDIVIDUALS, INCLUDING THE FISH AND WILDLIFE SERVICE, NATIONAL MARINE FISHERIES SERVICE, MAJOR ENVIRONMENTAL GROUPS AS WELL AS LOCAL AGENCIES AND LANDOWNERS.

Exhibit 7

Correspondence related to the CPUC settlement

(Thirty-six pages)

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, *Governor*

CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SA RANCISCO, CA 94105-2219
VC AND TDD (415) 904-5200

July 22, 1996

Mr. Michael Hertel
Southern California Edison Company
P. O. Box 800
Rosemead, CA 91770

Dear Mr. Hertel,

The Commission staff has reviewed the PUC documents regarding the January 10, 1996 rate settlement between the San Onofre Nuclear Generating Station (SONGS) owners and the California Public Utilities Commission (CPUC). This letter summarizes our understanding of the CPUC settlement. This is background information that we intend to use, as may be relevant, in future staff reports.

It is our understanding that Southern California Edison (SCE),[1] as primary owner and manager of the plant, will receive $93.5 million for SONGS marine mitigation from ratepayers during the 1996 – 2003 term of the settlement (CPUC Decision 96-01-011)[2]. We understand that SCE also agreed with the CPUC that an additional $5 million would be required after the year 2003 for remaining marine mitigation costs, such as monitoring.

According to the CPUC Division of Ratepayer Advocates, the other SONGS owners settled separately with the CPUC, therefore the previous paragraph references only the separate SCE settlement. Applying the same calculation methods supplied by the CPUC staff for the SCE settlement, the total portion of the marine mitigation component of the SONGS settlement (for all SONGS owners, including SCE) is approximately $126 million.[3] Of this total amount we understand that the amount placed in the "sunk costs" (the amount theoretically already spent) category for the complete SONGS settlement (marine mitigation component) is approximately $22 million.[4]

---

[1] SCE is a 75% owner of, and manages the SONGS. San Diego Gas & Electric owns 20% of SONGS, and the Cities of Anaheim and Riverside own the remainder.

[2] $17 million to be recovered through accelerated depreciation and $76.5 million to be recovered through pre-set utility rates.

[3] Derived from the $110.94 million total project costs forecast for wetlands restoration, reef construction, fish return and fish hatchery projects contained in the document referred to by CPUC staff as "Exhibit 39" and also referenced as Exhibit # SCE 7, Vol. II, Part 1 of 2, prepared by SCE and dated December, 1993.

[4] CPUC staff have explained that $17 million of the SCE settlement for marine mitigation was placed into the "sunk costs" category i.e., monies identified as already spent by the date of the settlement. SCE filed a tariff with the CPUC in

There is no mechanism in the CPUC/SONGS settlement to return unspent marine mitigation moneys to the ratepayers. Further, the settlement contains no requirement that the SONGS owners provide an accounting to the CPUC of the amount actually spent on marine mitigation for SONGS operation. The SONGS owners have the CPUC's approval to recover $126 million from the ratepayers for marine mitigation, through a combination of accelerated depreciation and sales of electricity at pre-determined rates. Any portion of the total amount which the SONGS owners are not required to spend on marine mitigation will be retained as shareholder profit. However, if costs exceed those agreed to in the settlement, the SONGS owners cannot go back to the ratepayers for additional money to recover these additional costs.

If you believe any of this information or our understanding and characterization of it is incorrect or needs clarification please contact me.

Sincerely,

Susan M. Hansch
Deputy Director
for Energy, Ocean Resources, and Technical Services

cc: Coastal Commissioners
Public Utilities Commission staff

hertltr.doc/20/energy/hansch

April, 1996, however, indicating that only $16 million had actually been spent by that date. You testified to the Coastal Commission in November, 1995, that $22 million had already been spent on marine mitigation.

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, Governor

CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200

July 24, 1996

Craig Denisoff, Wetlands Coordinator
State of California, Resources Agency
1416 Ninth Street, Suite 1311
Sacramento, California 95814

RE: **Update on SONGS/CPUC Settlement**

Dear Mr. Denisoff:

The Energy, Ocean Resources, and Technical Division staff briefed you July 2 on the January 10, 1996 settlement between the San Onofre Nuclear Generating Station (SONGS) owners and the California Public Utilities Commission (CPUC). Since that time we have further confirmed the results of our research into the marine mitigation component of the settlement. We sent a letter to SCE with the same information contained in this letter, offering SCE the opportunity to comment.

We understand that Southern California Edison (SCE),[1] primary owner and manager of the plant, will receive $93.5 million for SONGS marine mitigation from ratepayers during the 1996 – 2003 term of the settlement (CPUC Decision 96-01-011).[2] We also understand that SCE also agreed with the CPUC that an additional $5 million would be required after the year 2003 for remaining marine mitigation costs, such as monitoring. According to the CPUC Division of Ratepayer Advocates, the other SONGS owners settled separately with the CPUC, therefore the previous paragraph references only the separate SCE settlement. Using the same calculation methods explained by the CPUC staff for the SCE settlement, the total amount of the marine mitigation component of the SONGS settlement (for all SONGS owners, including SCE) is approximately $126 million.[3] Of this total amount we understand the amount placed in the "sunk costs" (the amount theoretically already spent) category for the complete SONGS settlement (marine mitigation component) is approximately $22 million.[4]

---

[1] SCE is a 75% owner of, and manages the SONGS. San Diego Gas & Electric owns 20% of SONGS, and the Cities of Anaheim and Riverside own the remainder.

[2] $17 million to be recovered through accelerated depreciation and $76.5 million to be recovered through pre-set utility rates.

[3] Derived from the $110.94 million total project costs forecast for wetlands restoration, reef construction, fish return and fish hatchery projects contained in the document referred to by CPUC staff as "Exhibit 39" and also referenced as Exhibit # SCE 7, Vol. II, Part 1 of 2, prepared by SCE and dated December, 1993.

[4] CPUC staff have explained that $17 million of the SCE settlement for marine mitigation was placed into the "sunk costs" category — monies supposedly already spent by the date of the settlement. SCE filed a tariff with the CPUC in

There is no mechanism in the CPUC/SONGS settlement to return unspent marine mitigation monies to the ratepayers, nor does the settlement require that the SONGS owners notify the CPUC of the amount actually spent on marine mitigation for SONGS operation. Thus, the SONGS owners have the CPUC's approval to recover $126 million from the ratepayers for marine mitigation, through a combination of accelerated depreciation and sales of electricity at pre-determined rates, and any portion of the total amount which the SONGS owners are not required to spend on marine mitigation will be retained as shareholder profit. However, if costs exceed those agreed to in the settlement, the SONGS owners cannot recover the additional costs from the ratepayers.

We have enclosed referenced documents at your request. Please call me or Melanie Hale if you have any questions, or need further information.

Sincerely,

Susan M. Hansch
Deputy Director
for Energy, Ocean Resources, and Technical Services Division

Enclosures

20/hansch/denismem.doc

April, 1996, however, indicating that only $16 million had actually been spent by that date. SCE representative Mike Hertel testified to the Coastal Commission in November, 1995 that $22 million had already been spent on marine mitigation.

SOUTHERN CALIFORNIA
EDISON
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Michael M. Hertel, Ph.D.
Manager
Environmental Affairs

August 8, 1996

Susan M. Hansch, Manager
Energy, Ocean Resources & Technical Division
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, Ca. 94105-2219

Subject: Your letter of July 22, 1996 concerning Edison's 1996 General Rate Case Decision

Dear Ms. Hansch:

In your July 22, 1996 letter to me, you state your intention to use information concerning the SCE 1995 California Public Utilities Commission (CPUC) Division of Ratepayer Advocates (DRA) General Rate Case (GRC) settlement in future staff reports related to the San Onofre Nuclear Generating Station (SONGS) mitigation program. Certainly that is your prerogative. However, the SONGS mitigation program cost projections you set forth in your letter are both factually incorrect, and irrelevant to the mitigation issues before the Coastal Commission.

You characterize the CPUC approval, in relevant part, of the Edison/DRA settlement agreement as a "guarantee" that Edison will be able to recover, through "pre-set" utility rates, costs for marine mitigation at SONGS. That conclusion is in error. The fact is that Edison is not guaranteed any revenues, including recovery of marine mitigation costs, during the 1996-2003 term of the settlement (CPUC Decision 96-01-011).

The 1996 GRC Decision established a price to be paid by ratepayers for every kilowatt hour produced by SONGS. (The formula results in an average of about four cents per kilowatt hour generated over the 1996--2003 timeframe). None of the revenue is guaranteed. The revenues Edison receives from SONGS operations depends entirely on whether the plant operates and how efficiently it is operated. All costs related to plant operations, whether nuclear fuel, paper for copying machines, or marine mitigation, must be covered by revenues received from efficient operations. If the total cost of running the plant is higher than the revenues we receive through application of the performance based formula in the 1996 GRC Decision, Edison shareholders bear the burden and lose money. If the cost of operation is less than the revenues from the performance formula, our shareholders gain; that "performance based ratemaking" concept was at the heart of the CPUC's decision on our 1995 GRC.

Moreover, your implication that estimates of mitigation costs are relevant to determining a proper level of mitigation is wrong. The Edison/DRA settlement negotiations and the 1996 GRC Decision relied, in part, on estimates of the cost of mitigation. During negotiations, both sides discussed estimates of future SONGS operating costs, including those for marine mitigation, as a cross-check on the reasonableness of the performance-based ratemaking formula. It would have been irresponsible to negotiate a settlement without using estimates of future costs as a reasonableness check. However, those estimates do not reflect what would be considered reasonable to cover necessary mitigation, and use of those estimates categorically did not result in any revenue

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guarantees for incremental reductions in SONGS marine mitigation expenses. As such, the 1993 mitigation expense estimates bear no useful relationship to the Commission's task of deciding the level of reasonable mitigation of SONGS impacts to the marine environment.

The issue before the CCC is whether a proper connection or "nexus" exists between the marine impacts caused by SONGS and the mitigation imposed under the coastal permit. As the Independent Kelp Review Panel (chosen jointly by CCC staff and SCE) report validates, the impact of SONGS on the marine environment is substantially less than that estimated by the Marine Review Committee. Indeed, the Independent Kelp Review Panel report states that, even though there is uncertainty about the long-term persistence of kelp abundance, "...the abundance of kelp at San Onofre is approaching pre-operational levels." Therefore, the mitigation conditions imposed by the CCC in July 1991 are clearly no longer roughly proportional to the impact of the plant. Consequently, the Commission is legally obligated to hold a hearing and form a proper nexus between impact and mitigation. In short, your discussion of various estimates of future costs of the operation of SONGS that were included in negotiations surrounding the 1996 GRC Decision should not be used in an attempt to distract the Commission from the legitimate issues it must decide.

Edison is committed to pay for the reasonable costs of mitigating the marine impacts of the San Onofre Nuclear Generating Station. We remain available to talk with you about matching the level of mitigation to the impacts of the plant. We are convinced that the record now shows the mitigation provisions of our CCC permit are far in excess of the actual marine impacts caused by SONGS operations. We should work together to ensure that the Commission's focus remains fixed on matching the level of mitigation to the impact of the power plant and ensure that they are not distracted from that important task.

Sincerely,

Michael M. Hertel

cc: Coastal Commissioners
Peter M. Douglas, Executive Director

STATE OF CALIFORNIA—THE RESOURCES AGENCY PETE WILSON, Governor

CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200

August 21, 1996

Paul Clanon, Assistant Director
California Public Utilities Commission
Advisory and Compliance Division
Energy and Environmental Section
505 Van Ness Avenue, Third Floor
San Francisco, CA 94103

RE: CPUC staff assistance/San Onofre Nuclear Generating Station Settlements

Dear Mr. Clanon:

I write to thank you for the assistance your staff has provided to us in recent months during our evaluation of the settlements the CPUC has ratified this year with the San Onofre Nuclear Generating Station (SONGS) owners. Your staff, as well as the staff of the CPUC's Division of Ratepayer Advocates (DRA), has explained the following aspects of these settlements:

- The settlements allow the SONGS Units 2 and 3 owners, Southern California Edison, San Diego Gas & Electric, and the Cities of Anaheim and Riverside, collectively, to recover the costs of remediating the plant's adverse environmental effects (marine mitigation) as "sunk costs" ($22 million) and "incremental costs" ($104 million).

- The recovery of the marine mitigation total cost ($126 million) through 2003 will be realized by the SONGS owners through a combination of accelerated depreciation and pre-set rates for sales of SONGS power.

- Southern California Edison, as 75% owner of the SONGS and SONGS managing partner, negotiated $17 million in sunk costs and $76.5 million in incremental costs in its separate settlement with the CPUC (Decision No. 96-01-011), which is included in the $126 million total.

The amount designated for marine mitigation represents only a small fraction of the settlements which are collectively worth several billion dollars, but the amount is nevertheless significant to the Coastal Commission, members of the public, and the SONGS plant owners. Some of our Commissioners and members of the public have been concerned in the past that marine mitigation costs would directly burden ratepayers, or would render the continued operation of the plant uneconomical for its owners. We now

understand that neither scenario is likely. The settlements have established the amount that the ratepayers will be required to pay through the year 2003 for SONGS power. The amount the SONGS owners have been authorized to charge for SONGS power includes Edison's forecast of marine mitigation costs totaling $126 million (less $22 million in sunk costs) during that period. Thus, ratepayers will be charged for this amount of marine mitigation as a function of preset electricity prices regardless of the actual costs of the mitigation. We understand, of course, that the plant must actually be operated to generate revenues from electricity sales.

On Monday, August 19 we received SCE's amendment request to revise and reduce marine mitigation obligations arising from the conditions imposed by the Coastal Commission on the coastal development permit for the SONGS. We would appreciate written comments from you by September 10, 1996 regarding the accuracy of our analysis of the SONGS settlement information contained in this, and attached letters. We expect to use this information in the background section of our staff report, which will be prepared for a tentative Coastal Commission hearing date of Tuesday, October 8, 1996. It would also be helpful if you could have a CPUC staff member attend the hearing in case technical questions concerning the CPUC process/decisions arise. The hearing will be held in Los Angeles. The CPUC had a representative present at last year's Coastal Commission consideration of a previous SCE request for a SONGS amendment.

The focus of our staff analysis for the forthcoming hearing will be assessing a proper level of marine mitigation for the impacts of the plant. However, the rate settlement information is important to our understanding of the broader context within which the SONGS owners are seeking reductions in marine mitigation obligations. SCE representatives have explained in discussions with Coastal Commission staff and others that financial constraints are a factor in the SONGS owners' consideration of marine mitigation.

I have attached three letters regarding the SONGS settlement and one newspaper clipping for your reference. Two of the letters were reviewed by your staff prior to our release. The third letter was received by our office from SCE. The clipping is a November 2, 1995 Los Angeles Times article with relevant quotations of SCE representatives regarding SONGS.

From the SCE response you can see that our July 22 letter did not make clear to SCE that we understand that the marine mitigation component of the incremental costs category ($104 million of the $126 million settlement total) must be recovered through actual operations of the SONGS and resultant electricity sales, and that the CPUC settlement formula relies upon the operation of the SONGS at a 78% minimum efficiency rate to recover the marine mitigation (and other) predicted costs. As the SONGS Units 2 & 3 have reportedly set world records for operating efficiency rates (98%) within the past few

years, and as the plant continues to exceed the minimum operating efficiency of 78%, it seems that the expected sales of the plant's electricity production should allow the SONGS owners to recover the $104 million for marine mitigation that has been established in the incremental costs portion of the settlements.

We also understand that any savings the plant owners may realize as the result of reduced marine mitigation costs would be retained as shareholder profit and would not be returned to the ratepayers. On the other hand, should marine mitigation costs exceed the owners' forecasts, the ratepayers would not be required to pay more for SONGS power through 2003 as the result of these additional costs related to the plant's operation. We also understand that the settlement does not require the SONGS owners to report actual expenditures for marine mitigation to the CPUC, nor does any record exist of an itemized accounting by SCE (as the SONGS managing partner) for the $22 million that has been represented to the CPUC as sunk costs (amounts that have supposedly been previously expended).

In closing, I thank you in advance for assisting us by providing the requested written confirmation or clarification of the aspects of the CPUC SONGS settlements set forth in my letters. In addition, I want to take this opportunity to tell you how much we appreciate the efforts of two of your staff, Charles Goodman and Steve Layman in helping us to understand the details of the SONGS settlements. My staff has commented on their exceptionally courteous, thorough assistance. Please do not hesitate to contact me at (415) 904-5244 if you have any questions, comments, or if we can ever be of assistance to you.

Sincerely,

Susan M. Hansch

Susan M. Hansch
Deputy Director
for Energy, Ocean Resources, and Technical Services

Enclosures

cc: Charles Goodman
Steve Layman
Coastal Commissioners
Mike Hertel, SCE

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to place the project in receivership, the city also has accused the developers of serious financial improprieties.

A Bell executive said he was unaware of the allegations and placed the blame elsewhere.

The setbacks represent a major embarrassment for the city, which in 1993 trumpeted the Hayward as part of the most ambitious affordable housing effort in Los Angeles history.

"If it had worked, [the Hayward] would have been a laurel" for the city, said Ken De Gon, assistant director of the Housing Authority, a state agency that assists the city with affordable

lents. City officials are alleging in court documents that some of the money may have been diverted by the developers, threatening renovation efforts.

Meanwhile, tenants at the building still must contend with bad plumbing, unfinished repairs and severe rodent and cockroach infestation. The ongoing repairs have caused the roof to leak.

"You smell that?" the building manager asked one recent visitor. "Dead rat."

The current crisis is a far cry from spring, 1993, when the outgoing Administration of Mayor Tom Bradley touted the Hayward as part of a $110-million

affordable housing projects typically cost more than their buildings' appraised value might suggest. He added that once federal tax credits and other benefits are factored in, the Hayward's value should be close to $25 million.

Once the financing was secured, one of the project's main developers, Bell Diversified Development, and its property managers, Los Angeles-based Alpha Property Management, kept poor or nonexistent financial records, according to numerous documents and interviews with city officials.

Accounting giant Ernst & Young,

Please see PROJECT, A16

Pete Wilson predicted Wednesday that a move to place affirmative action back on the regents' agenda on Nov. 16 would fail, because it takes a clear majority to do so.

"It doesn't surprise me that a few regents want to have it reconsidered," said Paul Kranhold, Wilson's spokesman. "It takes more than three."

The regents voted 15 to 10 in July to abolish affirmative action programs.

According to the hunger strikers, UC Regents Ralph Carmona of

Please see STRIKERS, A16

Nuclear Plant Asks to Cut Back Marine Life Projects

■ Environment: Utility says all the steps agreed upon in 1991 are not needed now. Request for changes reopens debate over San Onofre facility's effects on ocean.

By DEBORAH SCHOCH
TIMES STAFF WRITER

When scientists concluded that the San Onofre Nuclear Generating Station was destroying massive numbers of fish and kelp, plant operators were required to undertake a plan to reduce damage to marine life.

Now, the utility companies that own the plant are seeking to curtail the 1991 mitigation plan—a turn of events that alarms environmentalists and threatens to reopen a decades-old debate over the effects of operating a nuclear plant alongside the Pacific Ocean.

Plant operator Southern California Edison wants the California Coastal Commission to rethink its requirements for mitigating the damage to fish and kelp beds.

For example, instead of creating a 300-acre kelp reef as required in the plan, Edison wants to build a 12-acre experimental reef near San Clemente. The utility also seeks other changes, such as shortening from 30 years to 10 years the monitoring time for its mitigation projects.

The plan was forged four years ago in response to a long-term scientific study that found that the nuclear plant had caused over time a 60% reduction in the area covered by a nearby kelp bed. The 1989 study also said the plant's cooling system sucks up and kills 21 to 57 tons of fish and 4 billion eggs and larvae each year.

But new research suggests that the San Onofre kelp bed has rebounded, Edison officials said.

"It's as healthy as it's been in recent history, and it's about as big as it can get," said Michael Hertel, Edison manager of environmental affairs, who questions the need for a 300-acre reef in light of the research.

A commission planner said she has not seen the new data. However, the size of kelp beds can fluctuate significantly from year to year, which was taken into account in the 1991 report's findings, planner Christiane Parry said.

Edison officials also warn that the cost of the mitigation program—initially estimated at $30 million—could skyrocket to as much as $160 million. The program includes the reef—to be built between Dana Point and Camp Pendleton—a planned San Diego County wetlands restoration project, fish hatchery funding and technical plant changes to protect fish.

Edison blames the soaring price tag on several factors, such as an initial estimate that was too low and projects that were more complex than expected. In particular, Edison officials said commission planners are unrealistic in their expectations, asking for costly features and in-depth research.

Although Edison wants to mitigate the plant's effects, company officials believe they can do it more cheaply, said Frank Melone, Edison senior engineer.

Please see NUCLEAR, A21

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NUCLEAR

Continued from A3

for environmental affairs.

"What we're asking for is just reconsideration. We want the commission to act in a fair and equitable way with us," said Melone, who estimates that the changes Edison is seeking would reduce costs to about $60 million.

If Edison were forced to finance full-scale mitigation as envisioned by the commission's staff, the utility would be forced to rethink the economics of operating its two San Onofre units, he said.

"It's a very serious issue for us," Melone said.

A Coastal Commission official said last week that state planners are simply working to implement conditions set by the commission.

"This is not a matter of the staff dreaming something up," said Susan Hansch, deputy director for energy, ocean resources and technical services. "Our job is to implement what the commission approves."

Hansch called the Edison proposal a "significant weakening of the mitigation package."

Talk of altering the program deeply angers environmentalists.

"Edison continues to think of the California coast as its own personal punching bag," said Mark Massara, director of the Sierra Club's coastal program.

When the mitigation program was approved four years ago, Massara said, "Southern California Edison was not only a cheerleader, but a sponsor of those mitigations."

Joan Jackson, a board member of the League for Coastal Protection, also criticized Edison's proposal to change the plan, including the cutback in monitoring.

"To do these projects and then walk away from them in a few years is irresponsible," Jackson said.

The changes are being sought by Edison and San Diego Gas & Electric, which owns a portion of the San Onofre plant.

Their proposal was rejected by Coastal Commission Executive Director Peter M. Douglas in an Oct. 12 letter. But a public hearing is planned for the commission's Nov. 15 meeting in Los Angeles, and the panel can choose to have the proposal studied further.

Edison is disturbed by Douglas' rejection and believes that new information on the kelp bed and other matters deserves to be reviewed by the panel, Hertel said.

"We don't want to spend more of our customers' money than is necessary," he said, adding that the company has already spent $21 million on the mitigation plan.

That plan is rooted in the history of the two units next to San Onofre State Beach south of San Clemente.

The huge cooling systems of the units draw in seawater at a rate of more than 1.6 million gallons a minute, discharging the water back into the ocean. Fish are sucked into the intake pipes and killed.

Environmentalists once predicted that the plant would wreak ecological havoc off the Southern California coast. And when Units II and III were approved in 1974, the Coastal Commission attached several conditions, including the creation of a Marine Review Committee that conducted a 15-year, $48-million study of the plants' effects.

After that study found that the plant had destroyed tons of fish, the Coastal Commission required Edison to build the 300-acre kelp reef, restore a 150-acre coastal wetland, improve the plant's fish protection systems and contribute money for a marine fish hatchery.

The hatchery opened last month in Carlsbad and is expected to produce and release more than 350,000 juvenile white sea bass annually.

A wetlands restoration project is planned for the San Dieguito River Valley, and officials are doing laboratory experiments to improve mechanisms to protect fish drawn into the plant's intake system.

But after extensive study, Edison has not found an ideal site for the kelp reef and believes the feasibility of such a reef is questionable, Melone said. In its place, Edison is proposing a 12-acre experimental reef and a 10-year study to evaluate it.

Melone said the ties between the San Onofre plant and kelp damage remain murky. Other factors may have hurt kelp in the area, such as oceanographic conditions and residual effects from plant construction, he said.

E SALE SHOP TODAY 10AM-9PM

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October 2, 1996

Mr. Charles Goodman
Mr. Steve Layman
California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

Subject: California Coastal Commission Staff Report – SONGS 2&3 Marine Mitigation

Dear Gentlemen:

I understand that you have been assisting the California Coastal Commission Staff (Coastal Commission Staff) in their analysis of the ratemaking for SONGS 2&3 (SONGS) adopted by the Public Utilities Commission in D. 96-01-011 and D. 96-04-059, Edison's Test Year 1995 General Rate Case (GRC). I have reviewed the Coastal Commission Staff's Report, dated September 24, 1996 and I have identified a number of errors. The Coastal Commission Staff has vastly overstated the estimate of Marine Mitigation costs used to develop the SONGS portion of the GRC Settlement.

The recorded amounts of SONGS "sunk" investment being amortized by Edison is less than the amount contemplated in the SONGS Settlement and the estimate of Marine Mitigation costs during the 1996-2003 time period are significantly below that alleged by the Coastal Commission Staff in their report. Providing the Coastal Commission Staff with a complete and accurate analysis of the record will be helpful in correcting the errors in their report and will then provide the Coastal Commissioners a sound basis upon which to render a decision on Edison's proposed amendment. As we all know, the Edison General Rate Case Settlement in general, and the SONGS Phase III in particular, was a long and contentious proceeding before the CPUC and the record is comprised of innumerable exhibits. Given the huge volume of the record and the long span of time involved, I understand how errors could occur. Therefore, I think it would be helpful to go through the evolution of the estimates chronologically.

<u>SONGS 2&3 Marine Mitigation, PUC Section 463 Ratemaking, GRC Exhibit No. 39</u>

When Edison submitted its Test Year 1995 General Rate Case testimony in December 1993, Exhibit 39 contained a preliminary estimate of SONGS Marine Mitigation costs, and a request to receive ratemaking treatment under terms of Public

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Utilities Code Section 463. This preliminary estimate would not have been used to set rates until the specific elements had been completed; and even then, only 75 percent of the forecast investment would have been placed into Major Additions Account (MAAC), subject to refund pending a CPUC reasonableness review. This initial estimate represented our best forecast as of mid-year 1993 for work orders expected to close well after Test Year 1995, but due to their preliminary nature it included a number of gross assumptions such as Edison overheads of 46 percent (including AFUDC). Also, the specific work order direct forecasts contained a 40 percent contingency.[1]

In response to an Office of Ratepayer Advocates (then DRA, now ORA) data request, Edison provided an updated estimate of all incremental costs associated with SONGS from 1995 through their remaining operating life (2013) and submitted it to ORA on January 21, 1994. This Edison response to Data Request No. 164 was made a part of the GRC record as Attachment 1 to their testimony, Exhibit No. 404, dated March 1994, and entered in the record on May 9, 1994. The revised estimate contained in Data Request No. 164 had reduced Edison overheads, but still included AFUDC, which was later removed to develop the ICIP.

Incremental Cost Incentive Pricing (ICIP)

In Exhibit 404, the ORA used the revised forecast of SONGS 2&3 incremental costs as a basis for recommending that the units be shut down, or in the alternative that the Commission adopt ORA's cents per kilowatt hour ratemaking proposal, which we now know as ICIP. This forecast of nearly all future SONGS costs was the starting point and source document used to negotiate the SONGS ICIP, not the preliminary estimate contained in Exhibit No. 39. If Exhibit 39 had been used to develop the ICIP, it would have resulted in a price greater than the average 4 cents/kWh adopted by the CPUC.

On September 2, 1994, Edison and the ORA reached agreement on a Memorandum of Understanding that was the basis for a Settlement of the GRC, includin all SONGS issues. Under terms of the MOU, Edison would amortize its share of SONG recorded net investment as of the effective date of the settlement so long as they did not exceed $2.749 billion (Note: All dollar amounts are stated in Edison share, unless otherwise identified) in overall net investment (including a $41 million "cap" on Edison's share of Marine Mitigation) and amortize them over eight years at a reduced ra of return. The costs incurred after Commission approval of the Settlement would be funded from ICIP revenues that averaged about 4 cents per kWh of SONGS generation. Because the revised Marine Mitigation costs were included in the ICIP price, the reques for Section 463 ratemaking and the forecast contained in Exhibit 39 was rendered moot, and identified as such in sworn testimony.[2]

[1] See GRC Transcript Vol. 13, dated April 21, 1994, page 1543, lines 14-25.
[2] GRC Exhibit No. 235, page III-3, lines 14-15.

Differences Between September 2, 1994 MOU and November 15, 1994 GRC Settlement

Between the time the MOU was signed (September 2, 1994) and the formal settlement was submitted (November 15, 1994), Edison updated the estimate used to develop the SONGS net investment. At that time, due to an impasse that developed between Edison and the Coastal Commission Staff about the Marine Mitigation project, it became apparent that Edison would not be able to spend the entire $41 million before the effective date of the settlement. It became apparent to Edison that the most we could responsibly spend on Marine Mitigation before the effective date of the settlement would be $17 million. This meant that the difference between $41 million and $17 million, some $24 million, would be incurred by Edison after 1996, with no equivalent additional revenues from customers and no increase in the ICIP price in any of the 8 years.

Under the terms of the settlement submitted to the Commission in November 1994, the Marine Mitigation "cap" was revised downward from the $41 million identified in the MOU to the $17 million agreed to by Edison and the ORA in the settlement. During this same period (between signing the MOU and submission of the formal settlement) Edison carefully reviewed its forecast of capital projects for SONGS (unrelated to Marine Mitigation) to determine whether we could move up certain investments from the 1996-2003 period and advance them to a date prior to the effective date of the settlement. Logically, if the amount of Marine Mitigation costs to be amortized was reduced, and potential projects advanced from the 1996-2003 time frame into the pre-1996 amortization period, Edison, all parties to the proceeding and the Commission would have seen a commensurate increase in the SONGS Plant In Service amount identified in the Settlement in order to accommodate this shift.

The actual, recorded amounts of SONGS Plant-in-Service being amortized by Edison is $52 million less than forecast in the Settlement. The Settlement anticipated a SONGS Plant-in-Service level of $4.225 billion (unrelated to Marine Mitigation)[3], however Edison only incurred $4.173 billion.[4] Therefore, the overstated Marine Mitigation program estimated by the Coastal Commission Staff in their September 24, 1996 Report is wrong.

Coastal Commission Staff Report, dated September 24, 1996

The Coastal Commission Staff's estimate of Marine Mitigation costs and their presumption of equivalent revenues available to Edison, and the other SONGS owners for Marine Mitigation has a number of errors. Their belief about the Settlement and the estimates is contrary to the factual record of the GRC and actual recorded data submitted to the CPUC by Edison.

[3] 1995 GRC Settlement, page 15, dated November 15, 1994.
[4] Edison Advice Letter No. 1174-E, dated August 2, 1996, Attachment B.

First, the Staff Report, on page 145, Appendix G, uses the preliminary estimate contained in the GRC Exhibit 39, dated December 1993. I want to reiterate that this estimate was not used to develop the GRC Settlement, this fact was expressly conveyed to the CPUC and submitted as part of the factual record in the settlement hearings. Testimony in support of the Settlement stated, "...Edison will not seek recovery of any Marine Mitigation costs in a Section 463 Application as originally requested in our GRC Application, (See Exhibit 39, Chapters V & VI, pp.28-35) and will pay for any costs incurred after February 1, 1996 only through revenue derived from ICIP" [which used the updated forecast from Exhibit 404].[5]

Second, the report states that Edison will amortize $17 million of Marine Mitigation investment as a "sunk" cost. The recorded, detailed amount of Marine Mitigation investment being amortized by Edison is less than this figure. To comply with CPUC decision D. 96-04-059, Edison is required to submit advice letters that detail the amount of SONGS investment actually incurred and placed in rates to be amortized. As recently as August 2, 1996, Advice Letter No. 1174-E, was filed with you at the Energy Branch of the CPUC, and demonstrates that Edison is amortizing only $15.4 million of Marine Mitigation sunk costs[6]. Furthermore, the Coastal Commission Staff Report states that you informed them that the amount being amortized for Marine Mitigation may not be, "...a true reflection of actual expenditures[7]." I don't understand how the Coastal Commission Staff conclude that Edison is recovering in customer rates capital investment that never occurred?

Third, the Coastal Commission Staff's report assumes that their estimate of the Marine Mitigation forecast will result in revenues set aside and available to fund Marine Mitigation during the 1996-2003 period. Exhibit No. 249, dated May 1995, in Edison's GRC, sets forth the SONGS capital forecast for each of the years subject to the ICIP ratemaking, and then identifies an estimate of Marine Mitigation embedded in the overall capital forecast. This exhibit also describes the evolution of the Marine Mitigation estimates from the first forecast contained in Exhibit 39 of the GRC, to the later estimate actually used to negotiate the settlement. This exhibit clearly demonstrates that the forecast used to develop the ICIP was $53.5[8] million over the 8-year period for Marine Mitigation, not the $76.5 million alleged in the Coastal Commission Staff Report.[9]

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[5] GRC Exhibit No. 235, page III-3, lines 14-15.

[6] This amount also includes Work Order No. 9219-1123 "Horseworld" Property, which in previous estimates was included in SONGS Plant-In-Service. The additional Work Orders included in the Marine Mitigation amortization are Nos. 1809-0451, 1809-0452, 1809-0455. For some odd reason the Coastal Commission Staff report keeps referring to "theoretically sunk" costs. I can provide copies of the work orders to demonstrate that the amounts being amortized are most certainly not theoretical, but indeed actual.

[7] Coastal Commission Staff Report, Appendix G, page 145, footnote 35.

[8] This estimate included $9 million of Marine Mitigation consistent with an agreement with the Earth Island Institute and not the subject of Edison's pending amendment at the Coastal Commission. Therefore, the disparity between the actual forecast and the Coastal Commission Staff's assumptions is even greater than it initially appears.

[9] Coastal Commission Staff Report, Appendix G, p. 145, footnote 36.

I want to underscore two important facts: (1) The $53.5 million estimate for Marine Mitigation could only have been increased if Edison had been able to advance the date of SONGS capital investment unrelated to Marine Mitigation and amortized them, thus making room for a higher Marine Mitigation forecast during the 1996-2003 time frame. This did not occur, and is supported by the actual recorded amounts currently being recovered in rates. (2) The forecast for future SONGS costs, including Marine Mitigation were used to demonstrate that the ICIP prices adopted by the CPUC were reasonable. The actual prices were the product of negotiations and not tied directly to a forecast as they would be under conventional ratemaking. The amount of ICIP revenues available to meet all SONGS costs depend on the actual output of the plants over the 8-year period and any savings realized from SONGS operations. Any savings realized from reductions in one part of SONGS' operations will first be used to fund potential increases in other SONGS operations, or be used for outage-related work. Only if Edison is able to restrain all costs and operate the plants at superior capacity factors will we even begin to partially restore the nearly $200 million of lost earnings due to the Settlement terms.

Fourth, the Coastal Commission Staff Report removes AFUDC from the sunk cost calculation and assumes that the post-2003 costs will be limited to $5 million. It assumes that Edison and the other participants will incur only $5 million from 2004 through 2013 for Marine Mitigation monitoring and is not substantiated in the GRC record. Beginning in 2004 SONGS generation will have to compete in an open electric market, and revenues available for this monitoring, will necessarily come from market-based revenues. The Coastal Commission Staff Report also incorrectly assumes that Edison will earn a return of 7.78 percent [10] on the SONGS amortization. In fact, the CPUC adopted a return on the SONGS amortization for Edison of 7.35 percent.[11]

[10] Coastal Commission Staff Report, page 51, line 8.

[11] D. 96-04-059, dated April 10, 1996, sets the embedded cost of debt at 7.78 percent for Edison, and a return on equity of 90 percent of 7.78 percent. This results in an overall rate of return (both debt & equity) on SONGS investment for Edison at 7.35 percent (a reduction in Edison's authorized return on equity of more than 400 basis points). Also see Revised Joint Response of Edison and SDG&E Submitted to the CPUC on February 5, 1996, page 2, footnote 3.

Conclusion

While I can appreciate the fact that many issues can be open to interpretation, I would hope that the factual record in the case and actual recorded data be used by all parties as we work to reach some agreement on issues. As you continue assisting the Coastal Commission Staff in their efforts to understand the SONGS ratemaking I hope you can provide them with an understanding of the complete record in the case. Thank you for taking the time to review this necessarily lengthy letter, and if I can be of assistance please contact me at 818/302-4177.

Sincerely,

Russ G. Worden /gs

Russell G. Worden
Manager, Regulatory Affairs

cc: Ms. Susan Hansch
California Coastal Commission

Mr. Robert Kinosian
Office of Ratepayer Advocates
California Public Utilities Commission

October 6, 1996

To: Susan Hansch
California Coastal Commission

From: Robert Kinosian
California Public Utilities Commission

Re: Marine Mitigation Costs For SONGS

Ms. Hansch,

I have reviewed the letter sent by Southern California Edison Company (SCE) on October 2, 1996. Contrary to SCE's assertions in the letter, there is nothing incorrect regarding the Coastal Commission Staff's analysis of the costs of marine mitigation measures contained in the Incremental Cost Incentive Pricing (ICIP) mechanism adopted by the CPUC. The ICIP incorporates over $75 million for marine mitigation, as the Staff has indicated.

The Staff's analysis accurately reflects what SCE describes in its letter: The original forecast of marine mitigation measures presented by SCE in its Exhibit 39; a reduction due to a decrease in SCE's forecast of overheads from 46% to 30%; a split of the costs into sunk costs, and incremental costs; a reduction in costs to reflect the elimination of AFUDC in the ICIP mechanism; and, a subsequent transfer of $24 million from the sunk cost category into the ICIP category at SCE's request.

The Staff and SCE differ in two areas, both of which are SCE errors. First, SCE asserts that the transfer of $24 million in marine mitigation costs from the sunk cost category to the ICIP category was somehow nullified because SCE's actual sunk costs were less than it originally forecast. This is incorrect. Nothing in DRA's agreement with SCE, nothing in the settlement document, and nothing in the CPUC's decision allows for the transfer of marine mitigation costs to be reversed. The fact that SCE's actual sunk costs for SONGS (over $2 billion, unrelated to marine mitigation costs) were slightly less than SCE originally forecast is unrelated to what was negotiated, agreed to and adopted for marine mitigation costs in the ICIP.

SCE apparently relies on Exhibit 249 from its general rate case to support its contention that the transfer of $24 million did not take place, and that only $53.5 million was ultimately included in the ICIP. This is incorrect. Exhibit 249 was

actually used during DRA's testimony in the proceeding. DRA indicated that SCE had failed to reflect the transfer of $24 million from sunk costs to the ICIP in claiming that the ICIP only reflected $53.5 million of marine mitigation costs. Thus, the correct value for marine mitigation costs in ICIP is $53.5 million plus $24 million, or $77.5 million, based on Exhibit 249.

SCE did not present any testimony of its own regarding these values in its general rate case, nor did it present any testimony or witnesses denying or responding to DRA's statements, reflected above. Thus, Exhibit 249 actually shows that SCE is incorrect, and that $77.5 million, not $53.5 million was included in ICIP.

In addition, I should mention that the settlement specifically indicates that SCE was to recover its actual sunk costs, not what SCE had forecast. It was never anticipated that SCE's forecast of sunk costs, as contained in the settlement, would be exactly the amount that would actually occur. SCE's forecast was used as a cap on what it would be allowed to charge ratepayers, with an expectation that the final amount would be equal to or less than the forecast. There was no provision for SCE to obtain more money from the ICIP if the actual sunk costs were less than forecast.

Second, SCE asserts that there is no basis from its general rate case to assume that only $5 million was expected to be incurred for monitoring costs after 2003. This is incorrect. As shown in the attachments to this letter, there is a basis for this assumption from SCE's general rate case. The basis is SCE's own forecast. This attachment, SCE's own workpapers, shows that SCE assumed $41 million in sunk costs, $4 million in post-2003 costs, and $61 million in incremental costs between February 1996 and 2003 for marine mitigation costs. Note, these workpapers were prepared before the agreed upon switch of $24 million from the sunk to the ICIP category, and also do not reflect the 10% reduction in ICIP costs regarding the elimination of AFUDC.

Finally, I should mention that SCE's statement that it needs to obtain reductions in operating costs to recover $200 million in lost earnings from the settlement is misleading. The $200 million earnings reductions contained in the settlement is not "lost". This reduction in SCE's earnings was agreed to by SCE in exchange for SCE being allowed to accelerate the recovery of its sunk costs. The earnings reduction was a tradeoff for the greater certainty of sunk cost recovery that SCE gained. Nothing in the settlement or in the CPUC's decision indicates that SCE was to be able to recoup this reduction through the ICIP payments.

SONGS 2 & 3/INCREMENTAL ADDITIONS SCENARIO

SONGS UNITS 2 & 3 - MARINE MITIGATION REVIEW COSTS

YEAR	BOY PLANT	ADDITIONS	EOY PLANT	DEPRECIATION RESERVE	EFFECTIVE ACCRUAL RATE	ACCRUAL	NET INVESTMENT
1993	---	---	0	0			0
1994	0	0	0	0	0.00%	0	0
1995	0	0	0	0	0.00%	0	0
2/1/96	0	0	0	0	0.00%	0	0
1996	0	1,638	1,638	46	5.62%	46	1,592
1997	1,638	31,081	32,719	1,054	5.87%	1,008	31,665
1998	32,719	18,343	51,062	3,038	4.74%	1,984	48,024
1999	51,062	2,000	53,062	6,240	6.15%	3,202	46,822
2000	53,062	2,000	55,062	9,585	6.19%	3,345	45,477
2001	55,062	2,000	57,062	13,084	6.24%	3,499	43,978
2002	57,062	2,000	59,062	16,749	6.31%	3,665	42,313
2003	59,062	2,000	61,062	20,596	6.41%	3,847	40,466
2004	61,062	2,000	63,062	24,643	6.52%	4,047	38,419
2005	63,062	2,000	65,062	28,912	6.66%	4,269	36,150
2006	65,062	0	65,062	33,431	6.95%	4,519	31,631
2007	65,062	0	65,062	37,950	6.95%	4,519	27,112
2008	65,062	0	65,062	42,469	6.95%	4,519	22,593
2009	65,062	0	65,062	46,988	6.95%	4,519	18,074
2010	65,062	0	65,062	51,507	6.95%	4,519	13,555
2011	65,062	0	65,062	56,025	6.94%	4,518	9,037
2012	65,062	0	65,062	60,544	6.95%	4,519	4,518
2013	65,062	0	65,062	65,062	6.94%	4,518	0

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SETTLEMENT WITH ACRA/ 7 YEAR AMORTIZATION

SONGS UNITS 2 & 3 - MARINE MITIGATION REVIEW COSTS

YEAR	BOY PLANT	ADDITIONS	EOY PLANT	DEPRECIATION RESERVE	EFFECTIVE ACCRUAL RATE	ACCRUAL	NET INVESTMENT
1993	---	---	0	0			0
1994	0	2,210	2,210	55	5.00%	55	2,155
1995	2,210	0	2,210	169	5.13%	113	2,041
2/1/96	2,210	38,300	40,510	178	0.53%	[illegible]	40,332
1996	40,510	0	40,510	5,523	13.22%	5,355	34,987
1997	40,510	0	40,510	11,354	14.39%	5,831	29,156
1998	40,510	0	40,510	17,186	14.39%	5,831	23,324
1999	40,510	0	40,510	23,017	14.39%	5,831	17,493
2000	40,510	0	40,510	28,848	14.39%	5,831	11,682
2001	40,510	0	40,510	34,679	14.39%	5,831	5,831
2002	40,510	0	40,510	40,510	14.39%	5,831	0

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CALIFORNIA PUBLIC UTILITIES COMMISSION
ENERGY DIVISION

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November 8, 1996

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COASTAL COMMISSION

Susan M. Hansch, Deputy Director
Energy, Ocean Resources, & Technical Services
California Coastal Commission
45 Fremont Street, Suite 2000
San Francisco, Ca 94105-2219

Dear Ms. Hansch:

Both Southern California Edison Company (Edison) and my staff provided data to Coastal Commission staff to assist in its review of the impact on changing required marine mitigation. My staff has carefully considered Edison's response to the sections of the Coastal Commission's September 24th staff report dealing with the level of San Onofre Nuclear Generating Station (SONGS) marine mitigation expenses embedded within the Incremental Cost Incentive Pricing (ICIP) forecast revenue schedule. After reading the Coastal Commission's report, it appears that further clarification might be useful. This clarification is provided at a staff level. Only the full Commission, by formal action, could render a binding opinion.

In its last general rate case proceeding Edison proposed a ratemaking settlement which was adopted by the CPUC. In that settlement the various parties, primarily Edison and the former CPUC Division of Ratepayer Advocates (DRA), addressed how Edison would recover its investment and operating expenses associated with SONGS. The settlement institutes a new performance based ratemaking treatment for SONGS. In contrast to our traditional cost of service ratemaking methodology, which provides Company shareholders full recovery of reasonable costs plus a profit, performance-based ratemaking establishes a reasonable profit and cost benchmark, then lets Company shareholders profit if they beat this benchmark or lose if they fail to meet the benchmark. In short, Edison's ability to profit at SONGS now depends on its ability to manage costs and maximize plant performance within the

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expected parameters of the settlement, and the rates charged to Edison's customers are no longer dependent on actual costs incurred in operating the plant.

The issue of the amount of marine mitigation costs included in Edison's benchmark revenue requirement for SONGS reduces to how one interprets the unfolding of the details of the settlement agreement. As an advisory organization within the CPUC, we are required to rely on the evidentiary record when interpreting these details. The record supports our original estimate of SONGS marine mitigation expenses included in the ICIP of $78.02 million.[1] This is the assumption the parties had in mind when determining whether the settlement would be a reasonable balance of risks for both shareholders and customers.

The inclusion of all marine mitigation costs in the ICIP was to be accompanied with Edison's transfer of approximately $24.5 million in other unrelated capital addition costs to the "sunk cost" portion of the settlement revenue requirement. This was a "swap," agreed to among the parties, of costs in the sunk cost component and costs included in the derivation of the ICIP component of the settlement revenue requirement. Edison now asserts that they never expended these funds before the deadline for the sunk cost was "capped", and that, therefore, the full $78.02 million of marine mitigation funds was not included in the ICIP.

We disagree. To the extent Edison failed to spend the capital additions costs originally projected in the ICIP and swapped to the sunk cost revenue requirement, any resulting loss should be borne by Edison shareholders. This is the consequence of the business risk assumed by the Company when it signed the settlement agreement. This does not imply that the marine mitigation expense swap or transfer of risk never happened. Neither does it change the intent of this Commission to include sufficient and reasonable marine mitigation funding levels in the ICIP revenue requirement.

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[1] In fact, our original calculation of marine mitigation costs included in the ICIP was approximately $1.5 million undervalued due to an error in accommodating AFUDC. The $78.02 million estimate corrects this initial error.

Another consideration is that, in evaluating the overall cost impacts of individual cost components for SONGS it is erroneous to consider only the one item in isolation. Edison gains or loses every hour when the plant operates above or below the expected level of production upon which settlement revenues were based. Edison gains or loses every time it spends less or more on *any* cost component than the amount used to derive the settlement revenue requirement. But in neither case is Edison required or entitled to, respectively, refund to customers any windfall gains or recover from customers the burden of any higher than expected costs.

If the question being considered by the Coastal Commission is: "*what is the financial impact on Edison if marine mitigation costs are not reduced?*", the answer is that Edison absorbs its bargained-for business risk that it would bear the expenses. If mitigation costs are reduced, just as if any other cost is actually lower than forecast when developing the settlement, Edison profits. But the loss or the profit of this one item is the risk Edison assumed in exchange for the settlement and the opportunity to profit (or lose) with respect to all of the other cost and revenue components in the settlement. The costs for the marine mitigation are presumed to be in the ICIP whether spent or not. Edison's inability to accelerate other costs into the sunk cost component of settlement revenues is not "offset-able" against the ICIP.

If you have any questions please don't hesitate to call me.

Sincerely,

Douglas M. Long, Manager
Environmental & Energy
Advisory Branch

cc

Melanie Hale	Coastal Commission
Charlie Goodman	CPUC
Steve Layman	CPUC
Russell Worden	Edison

California Public Utilities Commission
DRA
DIVISION OF RATEPAYER ADVOCATES
505 Van Ness Avenue
San Francisco, CA 94102-3298

Phone (415) 703-2061
FAX (415) 703-1981

EDMUND J. TEXEIRA
Director

November 8, 1996

To: Melanie Hale, California Coastal Commission

From: Robert Kinosian, SONGS Project Manager
Office of Ratepayer Advocates

Re: SONGS Marine Mitigation Costs

Dear Ms. Hale,

As we have discussed, there is a partial agreement between Southern California Edison (SCE) and the staff of the Office of Ratepayer Advocates (ORA) [1] regarding the amount of money authorized by the Public Utilities Commission for environmental mitigation measures for SONGS 2 and 3. ORA and SCE agree that it was originally contemplated that SCE would have approximately $41 million in sunk costs (i.e., already expended capital) for marine mitigation efforts as of January 31, 1996, and an additional amount of future costs of approximately $53 million for work that would take place after January 1996. Please note that these values are for SCE's share only. The costs for all the owners was approximately $55 million in sunk costs and $71 million for future costs.

As settlement talks between ORA and SCE progressed, SCE proposed shifting $24 million of sunk costs related to marine

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1 ORA is the new name of what was formerly known as the Division of Ratepayer Advocates, or DRA.

mitigation work into the future cost category. This resulted in a final breakdown of $17 million in sunk costs for marine mitigation, and $78 million in future costs, for SCE's share. Costs for all participants were approximately $22.5 million for sunk and $104 million for future costs. This was the final amount that was reflected in the settlement agreement between ORA and SCE, which was eventually adopted by the California PUC.

As part of the settlement agreement, the total sunk costs for SONGS are to be recovered from ratepayers over an eight year period, ending in 2003. The amount of sunk costs to be recovered was expected to be equal to or less than $2.68 billion, for SCE's share.

SCE has been allowed to collect all the sunk costs that were incurred prior to February 1996, as specified under the terms of the settlement. The fact that those actual costs were slightly less than the $2.68 billion originally forecast does not mean that SCE has lost any money. It has recovered all its actual sunk costs. As stated in the attached pages from the settlement, the estimate of sunk costs was intended to be exactly that, an estimate. It was not a definitive, binding number. The slight reduction in sunk costs does not in any way impact the amount of costs assumed for future marine mitigation work

The future costs of operating SONGS, including the estimated $104 million in future marine mitigation work, is to be recovered from ratepayers under a performance-based mechanism. SCE is allowed to charge ratepayers a fixed price, in cents/kwh, for

each kwh actually generated by SONGS. This mechanism has been labelled Incremental Cost Incentive Pricing or ICIP. The prices specified in the settlement reflect the assumption that SCE would incur $104 million in future marine mitigation costs for SONGS. If SCE incurs lower costs, SCE's shareholders, not ratepayers, get the savings.

Based on recent discussions with SCE, I believe there is no disagreement between ORA and SCE on any of the above facts. However, SCE suggests that because it believes that it might not recover all its costs for non-marine mitigation work, that the ICIP does not in actuality reflect $104 million in marine mitigation work. ORA does not agree with such an interpretation, nor do we believe that SCE has in any way substantiated that it may face a shortfall of revenues under the settlement provisions.

Since the ICIP mechanism allows SCE to charge ratepayers a fixed price per kwh for SONGS generation, it is possible that SCE will in the future recover less than its full costs of operation from ratepayers, or more than its full costs. The outcome will depend on how reliably the plant operates over the next 8 years, and whether the costs of operation are higher or lower than the assumptions built into the ICIP prices.

While SCE has suggested that it might recover less than its full costs for one element of SONGS operation costs, it has not indicated whether its overall revenues for operation are above or below its costs. It is my understanding that the plant has operated more reliably than the 78% capacity factor assumed in

the settlement so far this year, which would suggest that SCE has likely earned significant profits from the ICIP mechanism, rather than suffering any loss as it has implied. In any case, the ICIP prices reflect an assumption of $104 million or marine mitigation work being performed after January 1996, whether SCE earns excess profits from the ICIP mechanism or not.

DRAFT

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

In The Matter Of The Application Of SOUTHERN CALIFORNIA EDISON COMPANY (U 338-E) For Authority To Increase Its Authorized Level Of Base Rate Revenues Under The Electric Revenue Adjustment Mechanism For Service Rendered Beginning January 1, 1995 And To Reflect This Increase In Rates.	)	A.93-12-025
Order Instituting Investigation Into The Rates, Charges, And Practices Of SOUTHERN CALIFORNIA EDISON COMPANY, Establishment Of The Utility's Revenue Requirement, And Attrition Request.	)	I.94-02-002

SETTLEMENT AGREEMENT

Dated: November __, 1994

DRAFT

4.3.1.2 The amount to be amortized will consist of Edison's SONGS 2 & 3 Sunk Costs recorded[6] as of January 31, 1996. SONGS 2 & 3 Sunk Costs through January 31, 1996 are estimated to be as follows:

a)

Line No.	Investment	($ 000)
1.	Plant-in-Service[7]	4,224,741
2.	Marine Mitigation Costs[8]	17,000
3.	Design Basis Documentation	32,373
4.	Deferred Debit for Commercial Operating Date Adjustment	13,723
5.	Material & Supply Inventory[9]	45,180
		4,333,017
6.	Less: Accumulated Depreciation	<1,652,260>
7.	Total	2,680,757

While forecast estimates of categories identified in the table above are not to be exceeded, and the total estimate of SONGS 2 & 3 Sunk Investment to be amortized will not be exceeded, the specific individual capital investments within each investment category in lines 1 through 5 are not intended to be definitive or binding. There is no intent or implication that any specific projects or investments are included or excluded from this

6/ This amount shall be allocated for recovery from CPUC jurisdictional customers using the jurisdictional factors adopted in the Commission's decision in the GRC.
7/ Includes SONGS Common Facilities.
8/ Marine Mitigation Costs to be included in the sunk costs specified in this section shall include Construction Work In Progress as of January 31, 1996 as well as amounts in plant-in-service.
9/ This includes a net salvage of 10%.

DRAFT

estimate within the categories in lines 1 through 5 of the table above, provided that the total amount does not exceed $2,680,757,000.

b) The recovery of SONGS 2 & 3 Sunk Costs, with the exception of Property Taxes,[10] shall also include any and all federal, state and local tax costs or benefits, including, but not limited to environmental taxes, current income taxes (including current tax resulting from the reversal of timing differences previously flowed through to ratepayers), and the Deferred Tax related to the amortization of the SONGS 2 & 3 Sunk Costs from February 1, 1996 through the close of the 8-Year Period. The Deferred Tax expense will be computed using the new 8-Year Period book amortization and the ongoing tax depreciation, without any change to tax lives or methods. The accumulated Deferred Tax at January 31, 1996 is estimated to be $560 million.

c) Deferred Investment Tax Credits ("ITCs") will be returned to customers over the 8-Year Period subject to Edison obtaining a favorable private letter ruling from the Internal Revenue Service ("IRS"). If Edison does not receive a favorable

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10/ As explained in Section 4.3.1.5(b), in the event of permanent closure of SONGS 2 and/or 3, property taxes will be included in sunk cost recovery.

Exhibit 8

Letter to SCE from Susan Hansch, January 29, 1997

(Four pages)

STATE OF CALIFORNIA -- THE RESOURCES AGENCY

PETE WILSON, *Governor*

CALIFORNIA COASTAL COMMISSION
45 FREMONT, SUITE 2000
SAN FRANCISCO, CA 94105-2219
VOICE AND TDD (415) 904-5200
FAX (415) 904-5400

January 29, 1997

Michael Hertel, Ph.D.
Frank Melone
Southern California Edison Company
P.O. Box 800
Rosemead, CA 91770

Re: SONGS Permit Amendment Request

Dear Dr. Hertel and Mr. Melone:

This letter is a more detailed follow-up to the conversations we have had regarding the next steps in acting on SCE's amendment request.

We have tentatively scheduled the SONGS permit amendment request for the Commission's April 8-11, 1997 hearing in Huntington Beach. We believe the April hearing is the most appropriate hearing for several reasons.

First, the Commission has expressed interest in not delaying action on the amendment request. At its November hearing, the Commission directed staff to agendize the amendment for February. Staff agreed to postpone the item at Edison's request because of our understanding that Edison intends to submit information amending its submittal.

Second, the April hearing allows us to meet the deadlines set forth in the Permit Streamlining Act. If the Act applies to the amendment request, the deadline for Commission action is the June 1997 hearing. We believe there may be a strong argument that the Act does not apply to this amendment request. We are willing to discuss the applicability of the permit streamlining act deadlines with you further if you wish. However, now, out of an abundance of caution and in light of the Commission and public interest in resolving this amendment request, which affects public resources, it is appropriate to schedule the amendment for a hearing that meets the Permit Streamlining Act deadlines.

Third, after reviewing the location of the hearings up to June, we have determined the April hearing in Huntington Beach will be at the most appropriate location to maximize opportunities for the public to participate.

This letter outlines the next steps that must be taken in order for Commission staff to develop a recommendation for the April hearing. In order for staff to base a recommendation an any new information that Edison intends to submit, we must receive the information within a certain timeframe, as discussed further below.

Condition A, Wetland Mitigation:

The August 16, 1996, amendment proposed numerous modifications to Condition A to address SCE's site-specific concerns at the Commission approved wetland mitigation site, San Dieguito Lagoon. The amendment request also included a preliminary plan for a wetland mitigation project at San Dieguito Lagoon. The preliminary plan is intended to satisfy the requirements of Condition A as amended by Edison's proposal. Because the San Dieguito Joint Powers Authority (JPA) has withdrawn approval to use its lands, Edison must now work to redefine the project(s) it believes will satisfy Condition A.

The Commission staff is committed to working with Edison and the JPA to ensure implementation of the largest feasible wetland mitigation project at San Dieguito Lagoon. We understand that the most pressing issues regarding San Dieguito Lagoon involve questions of feasibility, from both an economic and a flood liability standpoint. Commission staff is eager to join you in any discussions or meetings with the JPA, the Coastal Conservancy, and others, in order to facilitate timely resolution of the outstanding issues. Staff's participation will also allow us to keep up-to-date on the revised project, thereby allowing for more timely review of the revised project upon submission to the Commission.

San Dieguito Lagoon is currently the only Commission-approved wetland mitigation site eligible to satisfy Edison's obligation to create or substantially restore 150 acres of coastal wetland habitat. Should further information lead Edison to propose alternative or additional wetland mitigation sites, then the site selection process described in Condition A should be followed to obtain approval from the Commission. The current amendment request includes Ormond Beach as a proposed additional wetland restoration site. Please clarify whether the Ormond Beach Project is still a part of your amendment and condition compliance package.

For an April, 1997 Commission hearing on the SONGS permit amendment request, Edison must submit all written information on the redefined wetland mitigation project(s) and any proposed Condition A amendments to Commission staff by February 14, 1997. Mailing of all staff reports for the April hearing is March 21, 1997. If Edison does not submit new information by February 14, 1997, then staff will use the information submitted in the original amendment request in developing a staff report for the April Commission hearing.

Condition C, Kelp Reef Mitigation:

At this time the exact project Edison has proposed in compliance with Condition C is not clear. The original August 16, 1996, amendment request proposed that Edison construct a 16.8 acre experimental artificial reef and complete a 10-year research program to monitor and document the best construction methods. Major changes to Condition C language were also proposed, including: 1) deletion of the phased construction approach; 2) deletion of the performance standards; 3) deletion of the requirement to monitor for the life of the SONGS; and 4) deletion of the obligation to remediate inadequate performance. However, in a November 4, 1996, letter to Commission Chairman Calcagno, you stated that "...Edison would not oppose a Commission finding that the impact of SONGS on kelp

could be as much as 56.3 acres." This letter proposed changes to Condition C to require construction of two reefs: a 16.8 acre experimental reef, and a 39.5 acre mitigation reef (i.e., resurrection of the phased construction approach). Design of the larger mitigation reef would be based on the result of ten years of self-monitoring of the experimental reef. Finally, this letter proposed condition language that gave Edison the option to either build the mitigation reef, or provide $3.5 million (including interest) to a third party to complete the reef expansion.

Given the different proposed projects and amendments to Condition C, the prudent first step is for Edison to provide written clarification of the project and condition amendments it is proposing and that it considers now to be before the Commission. We would appreciate receipt of this written clarification as soon as possible and prior to February 14, 1997. This would allow staff to analyze the proposed project and condition amendments prior to receipt of the revised wetland project, thereby allowing us to focus appropriate Commission staff and resources on the wetlands component of the SONGS mitigation package, once submitted. Absent clarification of the proposed project and Condition C amendments, staff will use the information submitted in the August 16, 1996 amendment request in developing a staff report for the April Commission hearing.

Condition D, Administrative Structure:

At this time the exact changes to Condition D requested by Edison are unclear. Condition D provides the administrative structure necessary to fund independent monitoring, management, maintenance, and remediation of all projects implemented through Conditions A and C. In the original August 16, 1996 amendment request, Edison proposed completely replacing the existing Condition D language. The proposed condition deleted the requirement for independent monitoring, management, and maintenance, and instead proposed the need for remediation of the wetland mitigation project(s) would be determined through annual review at a Commission convened workshop. However, in a November 4, 1996 letter to Commission Chairman Calcagno, you offered alternative changes to Condition D that included up-front funding for monitoring and remediation. Such up-front funding would only occur if Edison elected to fund third parties to complete mitigation projects required under Conditions A and C.

Given the different proposals for amendments to Condition D, the prudent first step is for Edison to provide written clarification of the condition amendments it is proposing. We would appreciate receipt of this written clarification as soon as possible and prior to February 14, 1997. This would allow staff time to analyze the proposed condition amendments prior to receipt of the revised wetland project, thereby allowing us to focus appropriate Commission staff and resources on the wetlands component of the SONGS mitigation package, once submitted. Absent clarification of the Condition D amendments, staff will use the information submitted in the August 16, 1996, amendment request in developing a staff report for the April Commission hearing.

Trust Fund:

Over the last few years, the Commission staff has had several discussions with Edison regarding the concept of using a trust fund to implement the wetland and kelp reef components of the SONGS mitigation program, as well as to fund independent monitoring, management, maintenance, and remediation as required under Condition D. The Commission staff believe the trust fund approach is the most expeditious way to implement the SONGS mitigation program, and offers several advantages to both Edison and the Commission. In fact, your November 4, 1996 letter to Chairman Calcagno incorporates the trust fund concept as an optional approach for implementing Conditions A, C, and D. We would like to meet with you to discuss your current thoughts on the trust fund approach as soon as possible.

Conclusion:

We look forward to SCE's written clarification of the exact amendment request you believe is before the Commission for which the staff must prepare a recommendation. In the absence of written clarification by February 14, 1997, in order to hold an April hearing we will need to prepare a staff recommendation based on your August 11, 1996 amendment package.

Clearly there are numerous issues we need to work on over the next few months. As always, our primary objective is to work with you and your staff as cooperatively and expeditiously as possible to ensure all information reaches the Commission and public in a timely manner. The timelines provided in this letter are those necessary to hold an April Commission hearing on SCE's amendment application. Please contact me at (415) 904-5244 if you have any questions. I suggest that we have a meeting to discuss the timing issues described in this letter while I'm in San Diego on February 5, 1997 for the Commission meeting. During that meeting we can organize the other meetings that we will need to move this amendment along.

Sincerely,

Susan M. Hansch
Deputy Director

cc: Coastal Commissioners
Supervisor Pam Slater
Diane Coombs, JPA
Interagency Wetlands Advisory Panel
Michael Fischer, Coastal Conservancy
Melanie Deninger, Coastal Conservancy
Dennis Bedford, Department of Fish and Game

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Exhibit 9

Letter from SCE to Susan Hansch, February 14, 1997

(Four pages)

SOUTHERN CALIFORNIA
EDISON
An EDISON INTERNATIONAL Company

Michael M. Hertel, Ph.D.
Manager
Environmental Affairs

February 14, 1997

Susan Hansch, Manager
Energy, Ocean Resources & Technical Services Division
California Coastal Commission
45 Fremont, Suite 2000
San Francisco, Ca. 94105-2219

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FEB 21 1997
CALIFORNIA
COASTAL COMMISSION

Re: SONGS Permit Amendment Request

Dear Susan:

Thank you for your letter of January 29 and for the phone conference with you and Peter Douglas on February 11 concerning Edison's application to amend the San Onofre Nuclear Generating Station (SONGS) permit. You raise a number of important questions. Let me respond first to the question of scheduling the resumption of the hearing.

You say "...the Commission has expressed interest in not delaying action on the amendment request." We want to move ahead with the resumption of the hearing as soon as possible. However, the San Dieguito River Valley Joint Powers Authority (JPA)'s sudden withdrawal of permission to use its property for wetlands restoration at the November 13, 1996 Commission hearing caused inevitable delay. During the hearing the Commissioners expressed a desire to resolve issues in dispute in a way that produces viable solutions to move the mitigation program into the implementation phase as soon as possible. A delay to deal with the JPA questions is consistent with the Commission's guidance at the November, 1996 hearing and with your own position during the hearing that there is no basis to move forward without a viable wetlands restoration project.

You also suggest that moving forward with the April hearing "...allows us to meet the deadlines in the Permit Streamlining Act. If the Act applies...the deadline for Commission action is the June 1997 hearing." We have no wish to delay resumption of the hearing any longer than is necessary. However, our legal research confirms the Permit Streamlining Act is not applicable to the SONGS amendment request and therefore does not establish a deadline for Commission action. We also understand Jamee Patterson of the Attorney General's office believes the Permit Streamlining Act is inapplicable.

There are three substantive reasons why moving ahead in April as we both had planned is not now sound. First, we committed to work with you, the JPA and the Coastal Conservancy to attempt to resolve the JPA's objections to our San Dieguito Preliminary Restoration Plan. You correctly state that "...the most

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pressing issues regarding San Dieguito Lagoon involve questions of feasibility, from both an economic and flood liability standpoint." All parties are working diligently to deal with those questions. We participated with you, the JPA, and other interested parties at an all day workshop in San Diego on January 16, 1997 during which our scientific and engineering experts discussed extensive information on the JPA wetlands restoration proposal's flood damage impact, the infeasibility of the structures the JPA proposed to deal with the impact, and why the JPA proposal is likely to cost two to three times the average cost per restored acre as potential alternative sites. The JPA, as planned, is working (with the help of engineering consultants retained on their behalf through the Coastal Conservancy) to review that information. The Coastal Conservancy informed both the Commission staff and Edison that the first draft consultant report will not be available to Edison until March 9, 1997, at the earliest. Therefore, it is not possible to meet your deadline of a submittal by February 14 and give due consideration (as you asked us to do) to the JPA's responses and advice.

Second, we need to determine if there is a solution to the reef and administrative issues. We are in accord that we need to meet as soon as possible to discuss possible modifications to the amendments. Such discussions could lead to modifications that would be acceptable to us both. For a variety of reasons, we have been unable to come up with any open days for such a meeting on the Executive Director's calendar prior to the staff imposed February 14 submittal deadline.

Third, as you requested, we need to explore the possibility of developing an acceptable "trust fund" approach to implement the mitigation. We are anxious to discuss that option with you. Again, it has not been possible to find an open meeting time on your calendars prior to the February 14 submittal date. The "trust fund" concept depends upon either resolving the San Dieguito and kelp reef issues, or agreeing on a different basis for estimating a reasonable amount to be paid for mitigation.

For all the above reasons, we are not in a position to specify our intentions on these issues by February 14, 1997, as you requested. The end of March may be a more realistic time frame to expect a clarified Edison proposal. A May 1997 Commission hearing on the SONGS amendment application may be achievable, depending upon how quickly the JPA and Coastal Conservancy are able to act and depending on when we can get together to resolve the reef and administrative conditions.

In the meantime, we suggest doing several additional things to move implementation of mitigation forward.

With respect to wetland restoration, resolving the San Dieguito issues might not be possible because of technical, legal liability, or cost reasons. In addition, even if our original preliminary plan for the 223 acre San Dieguito project is accepted, you are willing to recommend only 92 acres credit. Since you took the position that Ormond Beach (our preferred alternate site) would only be acceptable if tidal circulation can be restored, it is prudent, at a minimum, to consider alternative ways of meeting the supplementary minimum 58 acres we would need in addition to San Dieguito. Therefore, we will initiate the site selection process described in Condition A for possible alternate and/or supplementary sites concurrent with the review of our Preliminary Plan for the restoration of San Dieguito. These sites include some of those listed in Condition A of the SONGS permit such as Tijuana, as well as San Elijo Lagoon, Huntington Beach property, and the West Newport Oil property at the mouth of the Santa Ana River. We welcome your suggestions for additional sites which also could be evaluated.

We also suggest moving ahead with implementation steps for the experimental kelp reef project. As of the November hearing there appeared to be agreement on the necessity of undertaking the 17 acre kelp reef experiment to assure that the full-sized kelp reef could be constructed successfully and to assure construction at the lowest possible cost. We are also in agreement with you and the resource agency reef experts about the design of the experiment. Therefore, we are prepared to undertake the engineering and other planning work for the experimental reef absent a resumption of the hearing in April. This will put us in a position to move ahead rapidly to put the experimental reef in place when the Commission takes final action.

We realize there may be criticism of further delay in continuing the hearing on the SONGS matter. Nevertheless, the abrupt removal of the JPA property from the wetlands mitigation portion of the mitigation, the linkage of the wetlands and kelp mitigation to the development of a "trust fund," as well as unresolved issues in the area of oversight, monitoring and administration, convince us that allowing more time to do things right is the prudent course. We therefore request that you not to set the SONGS matter for the Commission's April agenda. We are anxious to meet with you next week to begin resolution of the remaining matters. We pledge to continue to work diligently to resolve these issues as quickly as possible.

Sincerely,

Michael M. Hertel
Manager of Environmental Affairs

cc: Coastal Commissioners
Supervisor Pam Slater
Diane Coombs, JPA
Interagency Wetlands Advisory Panel
Michael Fischer, Coastal Conservancy
Melanie Deninger, Coastal Conservancy
Dennis Bedford, Department of Fish and Game
Craig Dennisoff, Resources Agency

Appendix A

SUBSTANTIVE FILE DOCUMENTS

Ambrose, R.F. 1990. *Technical Report to the California Coastal Commission*: H. *Mitigation*. Marine Review Committee, Inc.

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Dean, T.A. and L.E. Deysher. 1996. Reevaluation of the SONGS related changes in kelp at San Onofre. Submitted to Southern California Edison, 16 April 1996.

Eliot, J.L. 1992. Kelp density study: an evaluation of the kelp and subtidal hard bottom habitat off San Onofre, In Marine Environmental Analysis and Interpretation, San Onofre Nuclear Generation Station: Report on 1991 data. Southern California Edison Co. Report 92-RD-7.

Letter from Frank Melone (SCE) to Susan Hansch (CCC) dated December 23, 1994, re: definition of "substantially restore."

Letter from Roger Briggs, California Regional Water Quality Control Board—Central Coast Region, to Jeff Hays and Anne Jackson, PG&E, re: thermal effects monitoring program, dated September 3, 1996.

Moffat & Nichol Engineers. March 19, 1997. Wetland Restoration at San Dieguito Lagoon, Plan B.

MRC Interim Technical Report 2, Sampling Design and Analytical Procedures (BACIP).

MRC. 1989a. Final Report to the Marine Review Committee to the California Coastal Commission. August 1989. MRC Document No. 89-02.

MRC. 1989b. Technical Report to the California Coastal Commission. L. Physical and Chemical Oceanography

MRC. 1989c. Technical Report to the California Coastal Commission. K. Giant Kelp

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Summary staff report dated January 31, 1992. prepared for California Regional Water Quality Control Board, San Diego Region, for consideration of issuance of a cease and desist order for SONGS Units 2 and 3.

Transcript Coastal Commission Hearing, November 1995, Review of Executive Director's Determination to Reject Amendment Request.

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Appendix B

1991 COASTAL PERMIT 6-81-330 (Formerly 183-73)
TEXT OF ORIGINALLY APPROVED SPECIAL CONDITIONS A–F

CONDITION A: WETLAND RESTORATION MITIGATION

The permittee shall develop, implement and fund a wetland restoration project that compensates for past, present and future fish impacts from SONGS Units 2 and 3, as identified by the Marine Review Committee.

1.0 SITE SELECTION AND PRELIMINARY PLAN

In consultation with Commission staff, the permittee shall select a wetland restoration site and develop a preliminary plan in accordance with the following process and terms.

Within 9 months of the effective date of this permit, the permittee shall submit the proposed site and preliminary wetland restoration plan to the Commission for its review and approval or disapproval.

1.1 Site Selection

The location of the wetland restoration project shall be within the Southern California Bight. The permittee shall evaluate and select from sites including, but not limited to, the following eight sites: Tijuana Estuary in San Diego County, San Dieguito River Valley in San Diego County, Huntington Beach Wetland in Orange County, Anaheim Bay in Orange County, Santa Ana River in Orange County, Los Cerritos Wetland in Los Angeles County, Ballona Wetland in Los Angeles County, and Ormond Beach in Ventura County. Other sites proposed by the permittee may be added to this list with the Executive Director's approval.

The basis for the selection shall be an evaluation of the sites against the minimum standards and objectives set forth in subsections 1.3 and 1.4 below. The permittee shall take into account and give serious consideration to the advice and recommendations of an Interagency Wetland Advisory Panel, established and convened by the Executive Director. The permittee shall select the site that meets the minimum standards and best meets the objectives.

1.2 Preliminary Restoration Plan

In consultation with Commission staff, the permittee shall develop a preliminary wetland restoration plan for the wetland site identified through the site selection process. The

preliminary wetland restoration plan shall meet the minimum standards and incorporate as many as possible of the objectives in subsections 1.3 and 1.4, respectively.

The preliminary wetland restoration plan shall include the following elements:

a. Review of existing physical, biological, and hydrological conditions; ownership, land use and regulation.

b. Site-specific and regional restoration goals and compatibility with the goal of mitigating for SONGS impact to fish.

c. Identification of site opportunities and constraints.

d. Conceptual restoration design, including:

   1. Proposed grading and excavation; water control structures; planting; integration of public access, if feasible; buffers and transition areas; management and maintenance requirements.

   2. Proposed habitat types (including approximate size and location).

   3. Preliminary assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits.

   4. Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property interests.

   5. A graphic depiction of proposed plan.

1.3 Minimum Standards

The wetland restoration project site and preliminary plan must meet the following minimum standards:

a. Location within Southern California Bight.

b. Potential for restoration as tidal wetland, with extensive intertidal and subtidal areas;

c. Creates or substantially restores a minimum of 150 acres (60 hectares) of wetlands, excluding buffer zone and upland transition area;

d. Provides a buffer zone of a size adequate to ensure protection of wetland values, and not less than at least 100 feet wide, as measured from the upland edge of the transition area.

e. Any existing site contamination problems would be controlled or remediated and would not hinder restoration.

f. Site preservation is guaranteed in perpetuity (through appropriate public agency or nonprofit ownership, or other means approved by the Executive Director), to protect against future degradation or incompatible land use.

g. Feasible methods are available to protect the long-term wetland values on the site, in perpetuity.

h. Does not result in loss of existing wetlands.

i. Does not result in impact on endangered species.

1.4 Objectives

The following objectives represent the factors that will contribute to the overall value of the wetland. The selected site shall be that with the best potential to achieve these objectives. These objectives shall also guide preparation of the restoration plan.

a. Provides maximum overall ecosystem benefits e.g. maximum upland buffer, enhancement of downstream fish values, provides regionally scarce habitat, potential for local ecosystem diversity.

b. Provides substantial fish habitat compatible with other wetland values at the site.

c. Provides a buffer zone of an average of at least 300 feet wide, and not less than 100 feet wide, as measured from the upland edge of the transition area.

d. Provides maximum upland transition areas (in addition to buffer zones);

e. Restoration involves minimum adverse impacts on existing functioning wetlands and other sensitive habitats.

f. Site selection and restoration plan reflect a consideration of site specific and regional wetland restoration goals.

g. Restoration design is that most likely to produce and support wetland-dependent resources.

h. Provides rare or endangered species habitat.

i. Provides for restoration of reproductively isolated populations of native California species.

j. Results in an increase in the aggregate acreage of wetland in the Southern California Bight.

k. Requires minimum maintenance.

l. Restoration project can be accomplished in a timely fashion.

m. Site is in proximity to SONGS.

1.6 Restrictions

(a) The permittee may propose a wetland restoration project larger than the minimum necessary size specified in subsection 1.3(c) above, if biologically appropriate for the site, but the additional acreage must (1) be clearly identified, and (2) must not be the portion of the project best satisfying the standards and objectives listed above.

(b) If the permittee jointly enters into a restoration project with another party: (1) the permittee's portion of the project must be clearly specified, (2) any other party involved cannot gain mitigation credit for the permittee's portion of the project, and (3) the permittee may not receive mitigation credit for the other party's portion of the project.

(c) The permittee may propose to divide the mitigation requirement between a maximum of two wetland restoration sites, unless there is a compelling argument, approved by the Executive Director, that the standards and objectives of subsections 1.3 and 1.4 will be better met at more than two sites.

2.0 FINAL PLAN AND PLAN IMPLEMENTATION

2.1 Final Restoration Plan

Within 12 months following the Commission's approval of a site selection and preliminary restoration plan, the permittee shall submit a final restoration plan along with CEQA documentation generated in connection with local or other state agency approvals, to the Executive Director of the Coastal Commission for review and approval. The final restoration plan shall substantially conform to the approved preliminary restoration plan as originally submitted or as amended by the Commission pursuant to a request by the permittee. The final restoration plan shall include, but not be limited to the following elements:

a. Detailed review of existing physical, biological, and hydrological conditions; ownership, land use and regulation.

b. Evaluation of site-specific and regional restoration goals and compatibility with the goal of mitigating for SONGS impacts to fish.

c. Identification of site opportunities and constraints.

d. Schematic restoration design, including:

    1. Proposed cut and fill, water control structures, control measures for stormwater, buffers and transition areas, management and maintenance requirements.

    2. Planting Program, including removal of exotic species, sources of plants and or seeds (local, if possible), protection of existing salt marsh plants, methods for preserving top soil and augmenting soils with nitrogen and other necessary soil amendments before planting, timing of planting, plans for irrigation until

established, and location of planting and elevations on the topographic drawings.

3. Proposed habitat types (including approximate size and location).
4. Assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits.
5. Location, alignment and specifications for public access facilities, if feasible.
6. Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property rights.
7. Cost estimates.
8. Topographic drawings for final restoration plan at 1" = 100 foot scale, one foot contour interval.
9. Drawings shall be directly translatable into final working drawings.

2.2 Wetland Construction Phase

Within 6 months of approval of the final restoration plan, subject to the permittee's obtaining the necessary permits, the permittee shall commence the construction phase of the wetland restoration project. The permittee shall be responsible for ensuring that construction is carried out in accordance with the specifications and within the timeframes specified in the approved final restoration plan and shall be responsible for any remedial work or other intervention necessary to comply with final plan requirements.

2.3 Timeframe for Resubmittal of Project Elements

If the Commission does not approve any element of the project (i.e. site selection, restoration plan), the Commission will specify the time limits for compliance relative to selection of another site or revisions to the restoration plan.

3.0 WETLAND MONITORING, MANAGEMENT AND REMEDIATION

Monitoring, management (including maintenance), and remediation shall be conducted over the "full operating life" of SONGS Units 2 and 3. "Full operating life" as defined in this permit includes past and future years of operation of SONGS units 2 and 3 including the decommissioning period to the extent there are continuing discharges. The number of past operating years at the time the wetland is ultimately constructed, shall be added to the number of future operating years and decommission period, to determine the length of the monitoring, management and remediation requirement.

The following section describes the basic tasks required for monitoring, management and remediation. Condition II-D specifies the administrative structure for carrying out these tasks, including the roles of the permittee and Commission staff.

3.1 Monitoring and Management Plan

A monitoring and management plan will be developed in consultation with the permittee and appropriate wildlife agencies, concurrently with the preparation of the restoration plan, to provide an overall framework to guide the monitoring work. It will include an overall description of the studies to be conducted over the course of the monitoring program and a description of management tasks that are anticipated, such as trash removal. Details of the monitoring studies and management tasks will be set forth in a work program (see Section II-D).

3.2 Pre-restoration site monitoring

Pre-restoration site monitoring shall be conducted to collect baseline data on the wetland attributes to be monitored. This information will be incorporated into and may result in modification to the overall monitoring plan.

3.3 Construction Monitoring

Monitoring shall be conducted during and immediately after each stage of construction of the wetland restoration project to ensure that the work is conducted according to plans.

3.4 Post-Restoration Monitoring and Remediation

Upon completion of construction of the wetland, monitoring shall be conducted to measure the success of the wetland in achieving stated restoration goals (as specified in restoration plan) and in achieving performance standards, specified below. The permittee shall be fully responsible for any failure to meet these goals and standards during the full operational years of SONGS Units 2 and 3. Upon determining that the goals or standards are not achieved, the Executive Director shall prescribe remedial measures, after consultation with the permittee, which shall be immediately implemented by the permittee with Commission staff direction. If the permittee does not agree that remediation is necessary, the matter may be set for hearing and disposition by the Commission.

Successful achievement of the performance standards shall (in some cases) be measured relative to approximately four reference sites, which shall be relatively undisturbed, natural tidal wetlands within the Southern California Bight. The Executive Director shall select the reference sites. The standard of comparison i.e. the measure of similarity to be used (e.g. within the range, or within the 95% confidence interval) shall be specified in the work program.

In measuring the performance of the wetland project, the following physical and biological performance standards will be utilized:

a. Long-term Physical Standards. The following long-term standards shall be maintained over the full operative life of SONGS Units 2 and 3.

1) Topography. The wetland shall not undergo major topographic degradation (such as excessive erosion or sedimentation).

2) Water Quality. Water quality variables [to be specified] shall be similar to reference wetlands.

3) Tidal prism. The designed tidal prism shall be maintained, and tidal flushing shall not be interrupted.

4) Habitat Areas. The area of different habitats shall not vary by more than 10% from the areas indicated in the final restoration plan.

b. Biological Performance Standards. The following biological performance standards shall be used to determine whether the restoration project is successful. Table 1, below, indicates suggested sampling locations for each of the following biological attributes; actual locations will be specified in the work program.

1) Biological Communities. Within 4 years of construction, the total densities and number of species of fish, macroinvertebrates and birds (see table 1) shall be similar to the densities and number of species in similar habitats in the reference wetlands.

2) Vegetation. The proportion of total vegetation cover and open space in the marsh shall be similar to those proportions found in the reference sites. The percent cover of algae shall be similar to the percent cover found in the reference sites.

3) Spartina Canopy Architecture. The restored wetland shall have a canopy architecture that is similar in distribution to the reference sites, with an equivalent proportion of stems over 3 feet tall.

4) Reproductive Success. Certain plant species, as specified by in the work program, shall have demonstrated reproduction (i.e. seed set) at least once in three years.

5) Food Chain Support. The food chain support provided to birds shall be similar to that provided by the reference sites, as determined by feeding activity of the birds.

6) Exotics. The important functions of the wetland shall not be impaired by exotic species.

Table 1: Suggested sampling locations.

	Salt Marsh			Open Water			Tidal
	Spartina	Salicornia	Upper	Lagoon	Eelgrass	Mudflat	Creeks
1) Density/spp:							
Fish				X	X	X	X
Macroinverts				X	X	X	X
Birds	X	X	X	X		X	X
2) % Cover							
Vegetation	X	X	X		X		
algae	X	X				X	
3) Spar. arch.	X						
4) Repro. suc.	X	X	X				
5) Bird feeding				X		X	X
6) Exotics	X	X	X	X	X	X	X

CONDITION B: BEHAVIORAL BARRIER MITIGATION

The permittee shall install and maintain behavioral barriers including but not limited to mercury lights and sonic devices at SONGS Units 2 and 3 to reduce midwater fish impingement losses. Within 6 months of the effective date of this permit amendment, the permittee shall submit a plan for installation of behavioral barrier devices to the Executive Director for review and approval. Within 3 months of the Executive Director's approval, the permittee shall install the required devices.

In consultation with the permittee, the Commission staff will monitor the effectiveness of the behavioral barrier devices. If the Executive Director determines that the installed devices are not sufficiently effective to warrant continued use, the Executive Director may require removal and installation of alternative behavioral barrier devices.

CONDITION C: KELP REEF MITIGATION

The permittee shall, in consultation with the Executive Director, select a site and construct an artificial reef as mitigation for the resource losses at the San Onofre Kelp Bed (SOK) caused by the San Onofre Nuclear Generating Station (SONGS). The reef shall be designed to replace the lost and damaged resources at the San Onofre Kelp Bed Reef and produce a persistent giant kelp forest and associated ecosystem. The reef shall be located in the vicinity of the SONGS, but outside the influence of the SONGS discharge plume and water intake.

After selecting potential sites, and conducting a pre-construction site assessment at these potential sites, the permittee shall select a site and design a reef which meets the standards and objectives listed below. The permittee shall submit the final reef plan to the Commission for its review and approval.

1.0 SITE SELECTION

Three or more potential reef sites shall be selected based on, but not limited to, the following criteria:

1) Location as near as possible to the San Onofre Kelp Bed, and preferably between Dana Point (Orange Co.) and the Pendleton Artificial Reef (San Diego Co.), but outside the influence of the SONGS discharge plume and water intake;

2) Minimal disruption of natural reef or cobble habitats and sensitive or rare biotic communities;

3) Suitable substrate with low mud and/or silt content (e.g. hard-packed fine to coarse grain sand, exposed cobble or bedrock without an established biological community, or cobble or bedrock covered with a thin layer of sand);

4) Location at a depth locally suitable for kelp growth and recruitment;

5) Location near a persistent natural kelp bed;

6) Location away from sites of major sediment deposition;

7) Minimal interference with uses such as vessel traffic, vessel anchorages, commercial fishing, mariculture, mineral resource extraction, cable or pipeline corridors;

8) Location away from power plant discharges, waste discharges, and dredge spoil deposition sites;

9) Location that will not interfere with or adversely affect resources of historical or cultural significance such as shipwrecks and archeological sites.

1.1 Preconstruction Site Assessment

The permittee shall obtain site-specific field information, over a period of one year, at each of the three or more potential reef sites which best meet the above criteria. This field information shall be used in both the site selection and design of the reef. Field information shall: (1) include a description of existing biota at the site, (2) provide a reasonable prediction of the likelihood that a healthy kelp bed will be established and persist, (3) provide a reasonable prediction of the extent of rock burial due to sediment deposition and/or sinking into soft sediment, and (4) provide a prediction of the effect of the reef on local sand transport and local beaches.

The specific field information to be gathered, and the methods for gathering and analyzing it, shall be approved by the Executive Director. At the conclusion of this pre-construction assessment, the permittee shall select the most suitable site to build the reef, subject to the review and approval of the Executive Director, in consultation with the resource agencies. The site shall be submitted to the Coastal Commission, for its review and approval, as part of the artificial reef plan described in Condition C-2 below.

2.0 REEF DESIGN AND FINAL PLAN

Following the preconstruction site assessment, and within 18 months of the effective date of this condition, the permittee shall submit to the Commission, for review and approval, an artificial reef plan, designed to: (1) replace the damaged resources (as identified by the MRC) at the San Onofre Kelp Reef and (2) produce a persistent, healthy giant kelp forest and associated ecosystem. If the Executive Director determines that specific information is needed to evaluate whether the reef design will meet the goals and standards set forth in this condition, the Executive Director may direct the permittee to provide this information. The Executive Director, in evaluating the reef design, will consult with the resource agencies.

The primary goals of the reef shall be to provide: (1) stable rock surfaces and rock configurations that produce a community of algae and invertebrates similar in composition, diversity and abundance to SOK; (2) adequate conditions for giant kelp recruitment, growth, and reproduction, and (3) adequate conditions for a community of reef-associated biota similar in composition, abundance and diversity to SOK. This design shall meet the following standards:

1) The reef shall be constructed of rock determined to be suitable to sustain a kelp forest and a community of reef associated biota similar in composition, abundance and diversity to SOK. Additional devices may also be used to anchor kelp.

2) The total areal extent of the kelp reef shall be no less than 300 acres (120 hectares).

3) The 300 acre reef shall be covered by at least 200 acres (80 ha) of exposed rock substrate. Should the Executive Director determine that more rock coverage is necessary to meet the above goals, the Executive Director may require that the design include the additional coverage recommended.

4) The reef design shall take into account sediment deposition characteristics of the site, so that 200 acres of exposed stable rock substrate will be permanently present, be sufficiently free of scouring to support a diverse and stable community of attached biota, and allow kelp to become established and persist.

3.0 KELP REEF CONSTRUCTION

The reef shall be constructed in two phases. The first phase shall cover an area large enough to represent the important processes affecting a large 300 acre (120 ha) reef, but

no larger than necessary in the event there are major problems with the initial design. The proposed size of the first phase reef shall be included in the reef plan submitted to the Commission. This phase shall be monitored for at least 3 years to determine if the design is likely to meet the goals and standards set forth in this condition, and determine that the reef does not interfere with local sand transport. Management techniques shall be tested during this phase to determine if such techniques will better ensure that the goals and standards will be met. At the conclusion of this initial monitoring period, the permittee shall submit any recommendations for changes to the design to the Coastal Commission for its review and approval. Construction of the remaining portion of the reef shall be completed no later than 6 years after the effective date of this condition.

The artificial reef shall be constructed according to the approved design, including location, depth, overall rock coverage, rock size, dispersion of rocks, and rock relief. A post-construction survey shall be carried out to demonstrate that the reef was built to approved specifications. If the Executive Director determines that the reef was not built to specifications, the permittee shall modify the reef to meet the approved specifications.

4.0 MONITORING AND REMEDIATION

The permittee is fully responsible for any failure to meet the standards and goals set forth in this condition during the full operational years of SONGS units 2 and 3 as defined in Condition II-A-3.0. Should the Executive Director find that the goals and standards set forth in this condition have not been met, the permittee must immediately undertake necessary modifications to the reef design or other remediation determined by the Executive Director to be necessary to meet the standards and goals. If the permittee does not agree that the standards and goals have not been met, the matter may be set for hearing and disposition by the Commission.

4.1 Monitoring

Monitoring shall be implemented as described in Condition II-D to: (1) insure that the performance standards of this condition are met, (2) determine if the mitigation successfully replaces the lost and damaged resources in the San Onofre Kelp Bed Reef, and (3) determine the reasons why standards have not been met, so that remediation will be successful. The monitoring program shall be designed to assess whether the performance standards listed below have been met.

4.2 Performance Standards

a. **Substrate**. At least 90% of the 200 acres (80 ha) of exposed rock substrate must remain available for attachment by reef biota. If, at any time, more than 10% of the reef should become covered by sediment, or become unsuitable for growth of attached biota due to scouring, and there is no sign of recovery within 3 years, as determined by the Executive Director, more rock shall be added to the reef to replace the substrate lost. Surveys to monitor exposed rock substrate availability

shall begin immediately after construction is complete and shall continue for the full operational life of SONGS units 2 and 3.

b. **Kelp Bed**. Kelp recruitment experiments to determine the best method of establishing kelp on the reef shall be carried out in the first phase. The experiments shall provide a basis for future kelp establishment efforts should adequate natural recruitment fail to occur. Within 3 years of construction of the second phase, the Executive Director shall evaluate the status of kelp on the artificial reef. If 60% of the reef is not covered with a self-sustaining medium to high density kelp bed (defined as more than 4 adult plants/100 m2 of substrate), the reason for failure of the kelp bed to become established shall be determined, and an effort begun to establish or augment kelp on the reef. The experimental method determined by the Executive Director to be most likely to be successful and reliable shall be employed until kelp coverage meets the above standard, or until 5 years after establishment or augmentation is first attempted. If oceanographic conditions are unfavorable to kelp during part of this period, the Executive Director may direct the permittee to defer the effort to establish kelp.

   The reef shall sustain an average kelp coverage of 60% for the full operational life of SONGS units 2 and 3. If the long-term average kelp coverage does not meet this standard, the permittee shall undertake feasible corrective action, as identified by the Executive Director, to restore the kelp coverage to 60%. This may entail adding more rock to the reef. If, during the period of time of the full operational life of SONGS units 2 and 3, coverage of medium to high density kelp falls below 30% of the reef for two consecutive years, the Commission staff will, at the permittee's expense, evaluate the general state of kelp in the region. If the decline is region-wide, no attempt to correct the situation shall be required. If the decline is confined to the artificial reef, the permittee shall undertake feasible corrective action, as identified by the Executive Director, to restore the kelp coverage to 60%

c. **Fish**. Within 10 years of reef construction, the standing stock of fish at the reef shall be at least 28 tons. The MRC determined that this amount of reduction in the kelp bed fish biomass was caused by the operation of SONGS. The fish biota shall demonstrate the following characteristics:

   1) The resident fish assemblage shall have a total density and number of species similar to natural reefs within the region.

   2) Fish reproductive rates shall be similar to natural reefs within the region.

   3) The total density and number of species of young-of-year fish (fish in the first year after settling) shall be similar to natural reefs within the region.

   4) Fish production shall be similar to natural reefs within the region.

d. **Benthos**. Within 10 years of reef completion, the benthic community shall demonstrate the following characteristics:

1) The benthic community (both algae and macroinvertebrates) shall have a total density and number of species similar to natural reefs within the region.

2) The benthic community shall provide food-chain support for fish similar to natural reefs within the region.

3) The important functions of the reef shall not be impaired by undesirable or invasive benthic species (e.g. urchins, Cryptoarachnidium).

Samples taken at reference natural kelp reef sites shall be used to determine the similarity of each variable listed above for natural reefs within the region. The standard of comparison, i.e. the measure of similarity to be used, shall be specified in the work program (see Condition D). If the fish and benthos standards listed above are not met within 10 years after reef construction, the permittee shall be responsible for any corrective action the Executive Director deems appropriate and feasible.

CONDITION D: ADMINISTRATIVE STRUCTURE

1.0 ADMINISTRATION

Personnel with appropriate scientific or technical training and skills will, under the direction of the Executive Director, oversee the mitigation and monitoring functions identified and required by conditions II-A through C. The Executive Director will retain approximately two scientists and one administrative support staff to perform this function.

This technical staff will oversee the preconstruction and post-construction site assessments, mitigation project design and implementation (conducted by permittee), and monitoring activities (including plan preparation); the field work will be done by contractors under the Executive Director's direction. The contractors will be responsible for collecting the data, analyzing and interpreting it, and reporting to the Executive Director.

The Executive Director shall convene a scientific advisory panel to provide the Executive Director with scientific advice on the design, implementation and monitoring of the wetland restoration and artificial reef. The panel shall consist of recognized scientists, including a marine biologist, an ecologist, a statistician and a physical scientist.

2.0 BUDGET AND WORK PROGRAM

The funding necessary for the Commission and the Executive Director to perform their responsibilities pursuant to these conditions will be provided by the permittee in a form and manner determined by the Executive Director to be consistent with requirements of State law, and which will ensure efficiency and minimize total costs to the permittee. The amount of funding will be determined by the Commission on a biennial basis and will be

based on a proposed budget and work program, which will be prepared by the Executive Director in consultation with the permittee, and reviewed and approved by the Commission. If the permittee and the Executive Director cannot agree on the budget or work program, the disagreement will be submitted to the Commission for resolution.

The budget to be funded by the permittee will be for the purpose of reasonable and necessary costs to retain personnel with appropriate scientific or technical training and skills needed to assist the Commission and the Executive Director in carrying out the mitigation and lost resource compensation conditions (II-A through C) approved as part of this permit action. In addition, reasonable funding will be included in this budget for necessary support personnel, equipment, overhead, consultants, the retention of contractors needed to conduct identified studies, and to defray the costs of members of any scientific advisory panel(s) convened by the Executive Director for the purpose of implementing these conditions.

Costs for participation on any advisory panel shall be limited to travel, per diem, meeting time and reasonable preparation time and shall only be paid to the extent the participant is not otherwise entitled to reimbursement for such participation and preparation. Total costs for such advisory panel shall not exceed $100,000 per year adjusted annually by any increase in the consumer price index applicable to California.

The work program will include:

a. A description of the studies to be conducted over the subsequent two year period, including the number and distribution of sampling stations and samples per station, methodology and statistical analysis (including the standard of comparison to be used in comparing the mitigation projects to the reference sites.)

b. A description of the status of the mitigation projects, and a summary of the results of the monitoring studies to that point.

c. A description of the performance standards that have been met, and those that have yet to be achieved.

d. A description of remedial measures or other necessary site interventions.

e. A description of staffing and contracting requirements.

f. A description of the Scientific Advisory Panel's role and time requirements in the two year period.

The Executive Director may amend the work program at any time, subject to appeal to the Commission.

3.0 ANNUAL REVIEW

A duly noticed public workshop will be convened and conducted by the Executive Director or the Commission each year to review the status of the mitigation projects. The meeting

will be attended by the contractors who are conducting the monitoring, appropriate members of the Scientific Advisory Panel, the permittee, Commission staff, representatives of the resource agencies (CDFG, NMFS, USFWS), and the public. Commission staff and the contractors will give presentations on the previous year's activities, overall status of the mitigation projects, identify problems and make recommendations for solving them, and review the next year's program. The permittee shall report on the status of the behavioral barrier devices.

The public review will include discussions on whether the artificial reef and wetland mitigation projects have met the performance standards, identified problems, and recommendations relative to corrective measures necessary to meet the performance standards. The Executive Director will utilize information presented at the annual public review, as well as any other relevant information, to determine whether any or all of the performance standards have been met, whether revisions to the standards are necessary, and whether remediation is required. Major revisions shall be subject to the Commission's review and approval.

The mitigation projects will be successful when all performance standards have been met each year for a three-year period. The Executive Director shall report to the Commission upon determining that all of the performance standards have been met for three years and that the project is deemed successful. If the Commission determines that the performance standards have been met and the project is successful, the monitoring program will be scaled down, as recommended by the Executive Director and approved by the Commission. A public review shall thereafter occur every five years, or sooner if called for by the Executive Director. The work program shall reflect the lower level of monitoring required. If subsequent monitoring shows that a standard is no longer being met, monitoring may be increased to previous levels, as determined necessary by the Executive Director.

The Executive Director may make a determination on the success or failure to meet the performance standards or necessary remediation and related monitoring at any time, not just at the time of the annual public review.

CONDITION E: MRC DATA MAINTENANCE

The scientific data collected by the MRC will be stored in the Commission library in San Francisco, and at the Los Angeles County Museum of Natural Science, or at an alternative location in Southern California, as determined by the Executive Director; and will be made available for public use. The permittee shall purchase the necessary computer equipment for the Commission and the Southern California location to store and retrieve the data, and shall fund appropriate staff training on data storage and retrieval at both locations.

CONDITION F: MARINE FISH HATCHERY[1]

1.0 Provision of Funds

At the direction of the Executive Director of the California Coastal Commission (Executive Director), the permittee shall deposit $1.2 million in an interest bearing account established by the permittee. The funds shall be expended only upon the authorization of the Executive Director. All interest accrued on the funds shall be added to the program. The Executive Director shall have the authority to release the funds in phases as the construction of the hatchery proceeds.

2.0 Preconditions to Expenditure of Funds

Expenditure of funds for hatchery construction shall be contingent upon the following: (1) execution of an agreement between the California Coastal Commission ("Commission" or "Coastal Commission"), the California Department of Fish and Game (DFG), the Ocean Resources Enhancement Advisory Panel (OREAP), and Southern California Edison Company (SCE) incorporating the terms described below (see 3.0); (2) the Executive Director's approval of a comprehensive hatchery plan, prepared by the DFG (see 3.0(c)); (3) the formation of a "joint panel" for contractor selection (see 3.0(d)); and (4) granting of a coastal development permit and all other necessary permits for the hatchery.

3.0 Memorandum of Agreement

The Department of Fish and Game, the Ocean Resources Enhancement Advisory Panel, the Coastal Commission and Southern California Edison Company shall enter into a Memorandum of Agreement (MOA). The MOA shall include, but not be limited to, the following terms:

a. **Funding for Evaluation**. The Ocean Resources Enhancement Hatchery Program (OREHP) shall allocate OREHP funds to conduct the necessary evaluation program. The evaluation program is currently estimated to cost approximately $170,000 per year. OREHP shall dedicate, in a manner to be specified in the MOA, **at least** this amount of funding for the evaluation program, adjusted for inflation, for the duration of the evaluation program (10 years after the initial fish releases into the ocean). This funding amount does not include funding for the genetic quality assurance program. The funding for the first year of evaluation shall have been dedicated prior to issuance of the permit for construction of the hatchery. Under no circumstances shall evaluation funds be reduced below this level without the approval of the Joint Panel (see 3.0(d)), in order to augment funding for hatchery operations.

b. **Evaluation and Genetic Quality Assurance Objectives**. The objectives listed in Section 5.0 and Section 6.0 of this report, shall provide the basis for the

[1] The original staff report erroneously referred to this condition as Condition E: Marine Fish Hatchery.

development of the evaluation and genetic quality assurance programs, respectively.

c. **Comprehensive Hatchery Plan**. The DFG, in consultation with the Commission staff, shall develop a comprehensive hatchery plan and submit it for approval to the Executive Director of the Coastal Commission. The plan shall include, but not necessarily be limited to: (1) the specifications for the production of white seabass from broodstock to young juveniles, (2) a plan for the grow-out and release of the fish, (3) performance standards for measuring the success of the hatchery, (4) an enhancement objective i.e. what biomass or catch will be considered the endpoint for restoration of the white seabass population, and (5) a budget and schedule for the hatchery construction.

d. **Joint Panel**. A joint panel (Joint Panel) shall be formed, consisting of one representative from each of the following entities: the Coastal Commission, the Department of Fish and Game, and the Ocean Resources Enhancement Advisory Panel. The Joint Panel shall oversee the evaluation and genetic quality assurance of the hatchery. SCE may, but shall not be required to, appoint a fourth member of the panel. Should SCE determine it does not want to participate in the Joint Panel, a fourth qualified person shall be jointly selected by CCC, DFG and OREAP to replace the SCE representative. The Joint Panel shall make decisions based on the consensus of all panel members. Separate contracts shall be let for the evaluation and genetic quality control of the hatchery. The Joint Panel shall develop Request for Proposals (RFPs), recommend contractor selections to the Director of DFG, develop contract terms, and oversee and evaluate contractor performance in carrying out the evaluation and genetic quality assurance programs. The RFP for the evaluation contract shall incorporate the evaluation objectives listed in section 5.0. The RFP for the genetic quality assurance contract shall incorporate the objectives listed in section 6.0. Contractor selection shall be based, in part, on the ability of the contractor's proposal to achieve these objectives.

e. **Funding for Genetic Quality Assurance**. OREHP shall provide funding in amount sufficient to enable a contractor to achieve the objectives set forth in Section 6.0, for studies of the genetics of the wild stock of seabass, of the hatchery brood stock, and of any seabass released to the wild from the hatchery. Funding for these studies shall be in addition to the $170,000 to be allocated annually for the evaluation program (see 3.0(a)). The Joint Panel shall determine the necessary amount of funding and duration of studies, and shall oversee the genetic studies.

f. **Annual Reports.** On an annual basis, the evaluation contractor and genetic quality assurance contractor shall report on the previous year's activities and overall status of the hatchery project, identify problems and make recommendations for solving them, and review the next year's program at the Annual Mitigation Monitoring Review Meeting (to be held in accordance with the requirements of Condition D, Permit No. 183–73, dated July 16, 1992). The

contractors also shall prepare quarterly or semi-annual status reports for CCC and OREAP review.

g. **Failure to Carry Out the Terms of the MOA**. If the actions described in the MOA are not carried out fully, the Executive Director shall evaluate the situation, and recommend an appropriate course of action to the Coastal Commission.

h. **Environmental Degradation**. Contracts let by DFG in connection with the white seabass hatchery project shall require the hatchery contractors to closely monitor the operations of the hatchery and grow out facilities to ensure that they are not causing significant environmental degradation. Examples of ways that a marine hatchery can cause environmental degradation are: (1) discharge of effluent from the hatchery, (2) decayed or excess food and dead fish from the rearing pens, (3) introduction of pathogens or parasites, (4) trophic alterations such as cannibalism, food competition or predation on other species, and (5) genetic alterations to the wild stock due to hybridization or displacement. If, after consulting with the Joint Panel, the Executive Director determines that the hatchery is causing significant degradation of the environment, the Executive Director may order that the operations be halted until the degradation is stopped.

4.0 Failure to Sign an MOA

If, after a reasonable period of time, it becomes evident to the Executive Director that the parties specified in Section 3.0 are not willing to enter into an MOA that conforms to the standards of Section 3.0, the Executive Director shall consider a range of options for addressing the situation, and shall bring a recommendation to the Commission. Such options shall include requiring SCE to fund an alternative project. In that event, the Commission will determine if this permit condition shall be modified, or shall be null and void.

5.0 Evaluation Program

As described in Section 3.0 above, the Joint Panel shall develop an RFP for an evaluation contract, review proposals and recommend a contractor to the Director of DFG. The evaluation program shall have two stages: (1) the nearshore habitat sampling program for young white seabass (years 1 to 4), and (2) the ocean sampling program for adult white seabass (years 5 to 10). The evaluation proposals shall be judged, in part, on the ability of each proposal to achieve the following objectives.

5.1 Nearshore Habitat Sampling Program Objectives

a. Released fish should be counted accurately and marked, so that their source, date of release, place of release, and numbers released in each place can be determined if they are subsequently recaptured.

b. The field sampling program should be adequate to obtain the following

estimates:

(1) How many wild juvenile fish are present in each habitat area sampled?

(2) What are the annual losses (emigration and mortality) and gains (immigration and releases) of wild and hatchery raised juveniles in each embayment sampled?

c. The results of marking fish and sampling in nearshore habitats should answer the following questions:

(1) Do certain habitat areas or seasons result in better apparent survival of released fish?

(2) Can habitat areas be saturated by the release of too many juvenile fish?

(3) What are the optimal stocking densities and seasons for individual habitat areas?

5.2 Ocean Sampling Program

a. Heads of legal-sized white seabass (where tags will be found if present) should be collected from anglers and commercial passenger fishing vessels in cooperation with California Department of Fish and Game personnel and private parties. The fish heads should be collected from locations covering as wide an area as possible.

b. The study should be well publicized to inform the public about the purpose of the sampling and to increase the likelihood of recovering heads of tagged fish.

c. Fish heads should be deposited in freezers in standard locations and collected at appropriate intervals. Heads preserved in freezers could provide material for genetic studies, if needed.

d. The data from the ocean sampling program should be used to:

(1) Estimate the contribution of hatchery fish to the catch; and

(2) Estimate the mortality rate of hatchery fish.

6.0 Genetic Quality Assurance Objectives

The following section contains the objectives of the Genetic Quality Assurance Program. Some of the objectives will be achieved through genetic studies, others address aspects of the hatchery operation. As described in Section 3.0 above, the Joint Panel shall develop an RFP for a genetic quality assurance contract, shall evaluate proposals, and recommend a contractor to the Director of DFG. The genetic quality assurance proposals

shall be evaluated, in part, on the ability of each proposal to achieve the relevant objectives.

a. Population genetics and diversity of the wild population shall be described from enough individuals and for enough genetic loci (plural of locus, the location of a gene on a chromosome) to characterize the population so changes can be detected by reasonable monitoring efforts. The Joint Panel will determine whether the genetic diversity of white seabass is already adequately characterized or if the database should be expanded and more precise techniques developed.

b. The hatchery broodstock shall consist of a enough fish in the appropriate sex ratio to ensure that the effective hatchery population size will maintain genetic diversity and rare alleles (the different forms of a gene which can occur at a locus) in the hatchery-produced fish. The hatchery broodstock should consist of approximately 100 males and 100 females based on current information. The Joint Panel will determine the precise number.

c. Hatchery spawning and rearing practices will be implemented to achieve equal input from a large number of random breeders to preserve quantitatively the allelic diversity and genotypic variety of the wild stock in the fish released from the hatchery.

d. The effects of selection within the hatchery for traits favorable to survival within a hatchery, but not necessary for survival in the wild, shall be minimized. This should be done by adjusting the numbers of fish released from each batch spawned, so that the genetic composition of fish released is representative of the genetic composition of the wild population to the maximum extent possible (given the characteristics of the brood stock and knowledge of the genetic composition of the wild population).

e. Genotypes of spawners and samples of their offspring that are to be released shall be monitored as a quality assurance measure to document hatchery contributions to the wild stock and to provide data to detect long term changes in genetic diversity of the wild population. Tissue samples shall be taken from all of the spawners and an adequate sample of each batch released to the wild.

Appendix C

PERMITTEE'S PROPOSED AMENDMENTS TO CONDITIONS A, C, & D

(Twenty-one pages)

Application For Amendment of Coastal Permit No. 6-81-330
Filed August 16, 1996

Redline Version of SONGS Coastal Development Permit
Proposed Amendments to Conditions II-A, C, and D

SECTION II: ADOPTED PERMIT CONDITIONS

This section consists of five permit conditions. Condition A consists of a requirement for a wetland restoration project to mitigate for fish losses. Condition B consists of a requirement for the installation of behavioral barrier devices to divert fish from the cooling water intake areas. Condition C consists of a requirement for a artificial kelp reef to mitigate impacts to the San Onofre Kelp reef. Condition D describes an administrative structure to provided oversight and independent monitoring of the mitigation projects. Condition E addresses the issue of the maintenance and storage of the data collected by MRC.

CONDITION A: WETLAND RESTORATION MITIGATION

The permittee shall develop, implement and fund a wetland restoration project that compensates for past, present and future fish impacts from SONGS Units 2 and 3, as identified by the Marine Review Committee.

1.0 SITE SELECTION AND PRELIMINARY PLAN

In consultation with Commission staff, the permittee shall select a wetland restoration site and develop a preliminary plan in accordance with the following process and terms.

~~Within 9 months of the effective date of this permit,~~ Before January 1, 1997, the permittee shall submit the proposed site and preliminary wetland restoration plan to the Commission for its review and approval or disapproval.

1.1 Site Selection

The location of the wetland restoration project shall be within the Southern California Bight. The permittee shall evaluate and select from sites including, but not limited to, the following eight sites: Tijuana Estuary in San Diego County, San Dieguito River Valley in San Diego County, Huntington Beach Wetland in Orange County, Anaheim Bay in Orange County, Santa Ana River in Orange County, Los Cerritos Wetland in Los Angeles County, Ballona Wetland in Los Angeles County, and Ormond Beach in Ventura County. Other sites proposed by the permittee may be added to this list with the Executive Director's approval.

The basis for the selection shall be an evaluation of the sites against the minimum standards and objectives set forth in subsections 1.3 and 1.4 below. The permittee shall take into account and give serious consideration to the advice and recommendations of an interagency Wetland Advisory Panel, established and convened by the Executive Director. The permittee shall select the site that meets the minimum standards and best meets the objectives.

1.2 Preliminary Restoration Plan

In consultation with Commission staff, the permittee shall develop a preliminary wetland restoration plan for the wetland site identified through the site selection process. The preliminary wetland restoration plan shall meet the minimum standards and incorporate as many as possible of the objectives in subsections 1.3 and 1.4, respectively.

The preliminary wetland restoration plan shall include the following elements:

a. Review of existing physical, biological, and hydrological conditions; ownership, land use and regulation.

b. Site-specific and regional restoration goals and compatibility with the goal of mitigating for SONGS impact to fish.

c. Identification of site opportunities and constraints.

d. Conceptual restoration design, including:

1. Proposed grading and excavation; water control structures; planting; integration of public access, if feasible; buffers and transition areas: management and maintenance requirements.

2. Proposed habitat types (including approximate size and location).

3. Preliminary assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits.

4. Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property interests.

5. A graphic depiction of proposed plan.

1.3 Minimum Standards

The wetland restoration project site and preliminary plan must meet the following minimum standards:

a. Location within Southern California Bight.

b. Potential for restoration as tidal wetland, with extensive intertidal and subtidal areas;

c. Creates or substantially restores a minimum of 150 acres (60 hectares) of wetlands, excluding buffer zone and upland transition area:

d. Provides a buffer zone of a size adequate to ensure protection of wetland values, and not less than at least 100 feet wide, as measured from the upland edge of the transition area, except in those areas where a smaller buffer is functionally adequate or otherwise appropriate (e.g. near existing development).

e. Any existing site contamination problems would be controlled or remediated and would not hinder restoration.

f. Site preservation is guaranteed in perpetuity (through appropriate public agency or nonprofit ownership, or other means approved by the Executive Director), to protect against future degradation or incompatible land use.

g. Feasible methods are available to protect the long-term wetland values on the site, in perpetuity.

h. Does not result in any net loss of existing wetlands.

i. Does not result in impact on endangered species unless authorized by the appropriate regulatory agencies.

1.4 Objectives

The following objectives represent the factors that will contribute to the overall value of the wetland. The selected site shall be that with the best potential to achieve these objectives. These objectives shall also guide preparation of the restoration plan.

a. Provides maximum overall ecosystem benefits e.g. maximum upland buffer, enhancement of downstream fish values, provides regionally scarce habitat, potential for local ecosystem diversity.

b. Provides substantial fish habitat compatible with other wetland values at the site.

~~c. Provides a buffer zone of an average of at least 300 feet wide, and not less than 100 feet wide, as measured from the upland edge of the transition area.~~

cd. Provides maximum upland transition areas (in addition to buffer zones);

de. Restoration involves minimum adverse impacts on existing functioning wetlands and other sensitive habitats consistent with the goal of optimizing tidal restoration.

ef. Site selection and restoration plan reflect a consideration of site specific and regional wetland restoration goals.

fg. Restoration design is that most likely to produce and support wetland-dependent resources.

gh. Provides rare or endangered species habitat.

hi. Provides for restoration of reproductively isolated populations of native California species.

ij. Results in an increase in the aggregate acreage of wetland in the Southern California Bight.

jk. Requires minimum maintenance.

kl. Restoration project can be accomplished in a timely fashion.

lm. Site is in proximity to SONGS.

1.6 [sic] Restrictions

(a) The permittee may propose a wetland restoration project larger than the minimum necessary size specified in subsection 1.3(c) above, if biologically appropriate for the site, but the additional acreage must (1) be clearly identified, and (2) must not be the portion of the project best satisfying the standards and objectives listed above.

(b) If the permittee jointly enters into a restoration project with another party: (1) the permittee's portion of the project must be clearly specified, (2) any other party involved cannot gain mitigation credit for the permittee's portion of the project, and (3) the permittee may not receive mitigation credit for the other party's portion of the project.

(c) The permittee may propose to divide the mitigation requirement between a maximum of two wetland restoration sites, unless there is a compelling argument, approved by the Executive Director, that the standards and objectives of subsections 1.3 and 1.4 will be better met at more than two sites.

2.0 FINAL PLAN AND PLAN IMPLEMENTATION

2.1 Final Restoration Plan

Within 24~~12~~ months following the Commission's approval of a site selection and preliminary restoration plan, the permittee shall submit a final restoration plan along with CEQA documentation generated in connection with local or other state agency approvals, to the Executive Director of the Coastal Commission for review and approval. The final restoration plan shall substantially conform to the approved preliminary restoration plan as originally submitted or as amended by the Commission pursuant to a request by the permittee. The final restoration plan shall include, but not be limited to the following elements:

a. Detailed review of existing physical, biological, and hydrological conditions; ownership, land use and regulation.

b. Evaluation of site-specific and regional restoration goals and compatibility with the goal of mitigating for SONGS impacts to fish.

c. Identification of site opportunities and constraints.

d. Schematic restoration design, including:

1. Proposed cut and fill, water control structures, control measures for stormwater, buffers and transition areas, management and maintenance requirements.

2. Planting Program, including removal of exotic species, sources of plants and or seeds (local, if possible), protection of existing salt marsh plants, methods for preserving top soil and augmenting soils with nitrogen and other necessary soil amendments before planting, timing of planting, plans for irrigation until established, and location of planting and elevations on the topographic drawings.

3. Proposed habitat types (including approximate size and location).

4. Assessment of significant impacts of design (especially on existing habitat values) and net habitat benefits.

5. Location, alignment and specifications for public access facilities, if feasible.

6. Evaluation of steps for implementation e.g. permits and approvals, development agreements, acquisition of property rights.

7. Cost estimates.

8. Topographic drawings for final restoration plan at 1" = 100 foot scale, one foot contour interval.

9. Drawings shall be directly translatable into final working drawings.

2.2 Wetland Construction Phase

Within 6 months of approval of the final restoration plan, subject to the permittee's obtaining and complying with any ~~the~~ necessary permits, the permittee shall commence the final engineering and construction phase of the wetland restoration project. The permittee shall be responsible for ensuring that construction is carried out in accordance with the specifications and within the timeframes specified in the approved final restoration plan and shall be responsible for any remedial work or other intervention necessary to comply with final plan requirements.

2.3 Timeframe for Resubmittal of Project Elements

If the Commission does not approve any element of the project (i.e. site selection, restoration plan), the Commission will specify the time limits for compliance relative to selection of another site or revisions to the restoration plan.

3.0 WETLAND MONITORING, MANAGEMENT AND REMEDIATION

Monitoring~~,~~ will occur for 10 years after construction of the permittee's wetland restoration is completed to ensure that the restoration has been successful. During this time, the permittee will be responsible for all management (including maintenance)~~,~~ and remediation required to achieve success. If at the end of 10 years, the restoration is successful according to Condition II-A.3.4, the permittee's responsibility for monitoring and remediation shall cease. The permittee shall ensure that all monitoring will be performed by professionally qualified personnel.

Management by the permittee shall be conducted over the "full operating life" of SONGS Units 2 and 3. "Full operating life" as defined in this permit includes past and future years of operation of SONGS units 2 and 3 including the decommissioning period to the extent there are continuing discharges. The number of past operating years at the time the wetland is ultimately constructed, shall be added to the number of future operating years and decommission period, to determine the length of the ~~monitoring,~~ management ~~and remediation~~ requirement.

The following section describes the basic tasks required for monitoring, management and remediation. Condition II-D specifies ~~the administrative structure for carrying out these tasks, including~~ the role~~s~~ of the ~~permittee and~~ Commission staff.

3.1 Monitoring and Management Plan

A monitoring and management plan will be developed *and implemented* by the permittee in consultation with the Commission staff ~~permittee~~ and appropriate fish and wildlife agencies, including, but not limited to, the California Department of Fish and Game, the U.S. Fish and Wildlife Service, and the National Marine Fisheries Service (hereinafter jointly referred to as

the "Resource Agencies"). The Monitoring and Management Plan shall be submitted as part of the final restoration plan for Commission approval. The Monitoring and Management Plan will ~~, concurrently with the preparation of the restoration plan, to~~ provide an overall framework to guide the monitoring work and management. *The goal shall be to assess and maintain the success of the wetland restoration, as described in the Final Restoration Plan. The Monitoring and Management Plan shall describe the sampling methodology, analytical techniques, and methods for measuring attainment with the performance standards in permit Condition II-A.3.4.* It will include an overall description of the studies to be conducted over the course of the monitoring program and a description of management tasks that are anticipated, such as trash removal and inlet maintenance. ~~Details of the monitoring studies and management tasks will be set forth in a work program (see Section II-D).~~

The Management and Monitoring Plan shall provide for (1) inlet maintenance in perpetuity, if inlet maintenance is a component of the final restoration plan, and (2) all other maintenance for the full operating life of SONGS Units 2 and 3. At the permittee's discretion, the permittee may establish an endowment fund, or other appropriate mechanism, in an amount not to exceed $2,000,000. The endowment fund will be to fund the activities necessary to maintain tidal influence through the inlet in perpetuity and to perform all other long-term maintenance described in the Monitoring and Management Plan. Inlet maintenance shall consist of maintaining an inlet channel sufficient for (i) full tidal flows to the wetland within the tidal range at San Dieguito, (ii) immigration and emigration of marine fish, and (iii) water quality sufficient to support balanced populations of marine organisms.

3.2 Pre-restoration Site Monitoring

Pre-restoration site monitoring shall be conducted by the permittee to collect baseline data on the wetland attributes to be monitored. This information will be incorporated into and may result in modification to the overall monitoring plan.

3.3 Construction Monitoring

Monitoring shall be conducted by the permittee during and immediately after each stage of construction of the wetland restoration project to ensure that the work is conducted according to plans. Construction monitoring reports will be submitted monthly to the Executive Director.

3.4 Post-Restoration Monitoring and Remediation

Upon completion of construction of the wetland, monitoring shall be conducted by the permittee, in accordance with the Monitoring and Management Plan prepared under Condition II-A.3.1, to measure the success of the wetland in achieving stated restoration goals (as specified in

restoration plan) and in achieving performance standards, specified below. Monitoring surveys shall be conducted during years 1, 2, 3, 5, 7, and 10. A report documenting the results of annual monitoring shall be submitted to the Executive Director by the end of the first quarter following each year of monitoring. These reports shall utilize the baseline data collected under Condition II-A.3.2 to help determine if the goals and standards have been met. If the goals and performance standards are achieved at the end of the 10 year monitoring period, the final restoration plan will be considered successfully completed and the wetland monitoring program will cease. Except as provided in Condition II-A.3.5, the ~~The~~ permittee shall be fully responsible for any failure to meet these goals and standards during the 10 year monitoring period~~full operational years of SONGS Units 2 and 3~~. Consistent with the final restoration plan and in consultation with the Executive Director and the Resource Agencies, the permittee may take any steps necessary to meet these goals and standards during the 10 year monitoring period. Upon determining that the goals or standards are not being achieved during the 10 year monitoring period, the permittee and Executive Director shall prescribe remedial measures, after consultation with the ~~permittee~~Resource Agencies, which shall be immediately implemented by the permittee. ~~with Commission staff direction.~~ If the permittee does not agree that remediation is necessary, the matter may be set for hearing and disposition by the Commission.

The method for determining if the performance standards have been attained shall be specified in the Monitoring and Management Plan. Successful ~~achievement~~ attainment of the performance standards shall ~~(in some cases)~~ be measured relative to existing literature and data. ~~approximately four reference sites, which shall be relatively undisturbed, natural tidal wetlands within the Southern California Bight. The Executive Director shall select the reference sites. The standard of comparison i.e., the measure of similarity to be used (e.g., within the range, or with the 95% confidence interval) shall be specified in the work program.~~

In measuring the performance of the wetland project, the following physical and biological performance standards will be utilized:

a. Long-term Physical Standards. To assure restoration success, ~~T~~the following long-term standards shall be maintained throughout the 10 year monitoring period following construction of the wetland restoration~~over the full operative life of SONGS Units 2 and 3~~.

1) Topography. The wetland shall not undergo major topographic degradation (such as excessive erosion or sedimentation).

2) Water Quality. Water quality variables shall be maintained as specified in the Monitoring and Management Plan.~~[to be specified] shall be similar to reference wetlands.~~

3) Tidal prism. The designed tidal prism shall be maintained, and tidal flushing shall not be interrupted.

4) Habitat Areas. Habitat areas shall be maintained within the range described in the final restoration plan, including allowances for natural successional patterns.~~The area of different habitats shall not vary by more than 10% from the areas indicated in the final restoration plan.~~

b. Biological Performance Standards. The following biological performance standards shall be used to determine whether the restoration project is successful. These standards shall be achieved within 10 years (or earlier if so specified) following the completion of construction. ~~Table 1, below, indicates suggested s~~Sampling locations and methodologies for each of the following biological attributes~~; actual locations~~ will be specified in the ~~work program~~Monitoring and Management Plan.

1) Aquatic Organisms~~Biological Communities~~. Within ~~4~~10 years of construction, the wetland shall possess a sustainable estuarine community representative of fully tidal Southern California coastal estuaries. Density and diversity standards shall be based on information from the relevant literature sources, wetland-based data, and pre-construction baseline studies gathered at the project site. ~~total densities and number of species of fish, macroinvertebrates and birds (see table 1) shall be similar to the densities and number of species in similar habitats in the reference wetlands.~~

2) Vegetation. In newly vegetated areas in the final restoration plan, ~~T~~the proportion of total vegetation cover and open space in the marsh shall be 50% vegetation coverage by year 5. By year ten, 90% vegetation coverage must be achieved. Composition of vegetation must be similar to other Southern California tidal wetlands as determined by existing studies, literature, and data. Algae growth shall not reach nuisance conditions or significantly and adversely affect estuarine or marine animal species.~~similar to those proportions found in the reference sites. The percent cover of algae shall be similar to the percent cover found in the reference sites.~~

3) Spartina Canopy Architecture. ~~The restored wetland shall have a canopy architecture that is similar in distribution to the reference sites, with an equivalent proportion of stems over 3 feet tall.~~ *For those portions of the restored wetland that are dominated by Spartina foliosa and soils consist of clays and silts, the canopy architecture shall have a 30% proportion of stems over 3 feet tall as recommended by Zedler (1993).*

4) Reproductive Success. Certain *coastal salt marsh* plant species~~, as specified in the work program,~~ *that are dominant species* shall have demonstrated *vegetative or sexual* reproduction (i.e. seed set) at least once in three years.

5) Food Chain Support. The food chain support provided to birds shall be ~~similar to that provided by the reference sites, as~~ determined by feeding activity of the birds.

6) Exotics. The important functions of the wetland shall not be impaired by exotic species.

~~Table 1: Suggested Sampling Locations~~

	~~Salt Marsh~~			~~Open Water~~			~~Tidal~~
	~~Spartina~~	~~Salicornia~~	~~Upper~~	~~Lagoon~~	~~Eelgrass~~	~~Mudflat~~	~~Creeks~~
~~1) Density/spp:~~							
~~Fish~~				X	X	X	X
~~Macroinverts~~				X	X	X	X
~~Birds~~	X	X	X	X		X	X
~~2) % Cover~~							
~~Vegetation~~	X	X	X		X		
~~algae~~	X	X				X	
~~3) Spar. arch.~~	X						
~~4) Repro. suc.~~	X	X	X				
~~5) Bird feeding~~				X		X	X
~~6) Exotics~~	X	X	X	X	X	X	X

3.5 Uncontrollable Forces

Remediation shall not be required for a failure to achieve any performance standard substantially due to an "uncontrollable force." An uncontrollable force" includes any catastrophic event, unlawful or reasonably unforseeable act or acts of another, an act of God (such as an earthquake, fire, flood event exceeding the wetland design capacity described in the final restoration plan, hail storm, etc.), or other cause outside the reasonable control of the permittee which could not have been prevented by the permittee using due diligence and taking reasonable actions.

4.0 Ormond Beach Wetland Restoration and Management Plan

Within 60 days, the Permittee shall establish an internal, interest bearing, account in the amount of $3 million. The Permittee shall contribute up to $3 million, plus accrued interest, to the California State Coastal Conservancy or the City of Oxnard, depending upon which agency is to implement (the "Implementing Agency") the South Ormond Beach Wetland Restoration and Management Plan (the "Ormond Plan"). The Permittee shall first enter into an agreement with the Implementing Agency that limits the use of the money to the implementation of the Ormond Plan. Then, the Permittee shall distribute the money as requested by the Implementing Agency. Within 90 days of the adoption of the final environmental approvals pursuant to the National Environmental Policy Act and the California Environmental Quality Act, Edison shall execute a conservation easement, for

the 141 acre, Edison-owned, property discussed in the Ormond Plan, to the Implementing Agency.

The Permittee shall offer to the Implementing Agency the inclusion of additional wetlands, currently within the fenced boundary of the Ormond Beach Generating Station, in the Ormond Plan. These additional wetlands shall not include any upland or other areas used for operation and maintenance purposes, such as existing roads, the yard drain valve boxes and the pig launching pipes. If the additional wetlands are included within the final environmental approval is for the Ormond Restoration Plan, Edison shall grant a conservation easement to the Implementing Agency for the wetlands within the Generating Station's fenced boundary. Edison may reserve the right to (i) continue the present practice of draining storm water runoff on the wetlands, including water quality monitoring testing, (ii) continue the use of existing patrol roads around the wetland area, (iii) perform standard operation and maintenance activities, and (iv) require the Implementing Agency to meet with the Permittee prior to restoration and ensure the restoration does not either interfere with Generating Station operation and maintenance activities or breach the integrity of the security fence around the Generating Station.

CONDITION C: KELP REEF MITIGATION

The permittee shall, using qualified professionals and in consultation with the Executive Director, select a site and construct an experimental artificial reef for kelp as mitigation for possible resource losses at the San Onofre Kelp Bed (SOK) caused by SONGS. The experimental reef shall test the design parameters necessary for producing a persistent giant kelp forest and associated ecosystem.

1.0 SITE ASSESSMENT

The permittee shall select at least three potential sites and conduct pre-construction site assessments at these potential sites.

The permittee shall obtain information about each potential experimental reef site to allow the permittee to determine which site best meets the criteria of Section 2.0. This information shall be used in both the site selection and design of the experimental reef. Information shall: (1) include a description of existing biota at the site, (2) provide a reasonable prediction of the likelihood that a healthy kelp bed will be established and persist, (3) provide a reasonable prediction of the extent of rock burial due to sediment deposition and/or sinking into soft sediment, and (4) provide a prediction of the effect of the reef on local sand transport and local beaches.

2.0 FINAL SITE SELECTION

Selection of the actual experimental reef site from among the potential sites shall be based on, but not limited to, the following criteria:

1) Location as near as possible to SOK, and preferably between Dana Point (Orange Co.) and Carlsbad (San Diego Co.), but outside the influence of the SONGS discharge plume and water intake, and away from Camp Pendleton;

2) Minimal disruption of natural reef or cobble habitats and sensitive or rare biotic communities;

3) Suitable substrate with low mud and/or silt content (e.g. hard-packed fine to coarse grain sand, exposed cobble or bedrock without a persistent kelp biological community, or cobble or bedrock covered with a thin layer of sand);

4) Location at a depth locally suitable for kelp growth and recruitment;

5) Location near a persistent natural kelp bed;

6) Location away from sites of major sediment deposition;

7) Minimal interference with uses such as vessel traffic, vessel anchorages, commercial fishing, mariculture, mineral resource extraction, cable or pipeline corridors;

8) Location away from power plant discharges, waste discharges, dredge spoil deposition sites, and activities of the U. S. Marine Corps;

9) Location that will not interfere with or adversely affect resources of historical or cultural significance such as shipwrecks and archeological sites.

The permittee shall select the most suitable site to build the experimental reef, in consultation with the Executive Director and the resource agencies. The site shall be submitted to the Coastal Commission for its review and approval, as part of the experimental reef plan described in Condition C-3 below.

3.0 EXPERIMENTAL REEF DESIGN AND FINAL PLAN

Following the site selection process, and by December 31, 1995, the permittee shall submit to the Commission, for review and approval, an experimental reef for kelp plan. The experimental reef plan will be designed to identify and test those parameters important to the establishment of a persistent, healthy giant kelp forest and associated ecosystem.

The primary goals of the experimental reef shall be to test several promising substrate surfaces and configurations to determine which can provide adequate conditions for giant kelp recruitment, growth, and reproduction and adequate conditions for a community of reef-associated biota.

The total areal extent (as measured at the ocean bottom: the surface area within the perimeter of the reef's outermost hard substrate/sand interface area, as installed by the permittee) of the experimental kelp reef shall be 12 acres.

4.0 KELP REEF CONSTRUCTION

The experimental artificial reef shall be constructed according to the approved design. A post-construction survey shall be carried out by the permittee to demonstrate that the experimental reef was built to approved specifications.

5.0 TESTING

The permittee shall make scientific observations of the experimental reef over a 10-year period. This will allow a test for differences among designs to determine which provides the best habitat for kelp and associated biota, as described in the Final Plan. The Plan shall set forth the methods of observations and statistical means of evaluating differences among reef designs. At the conclusion of this 10-year period, the permittee's further obligation shall be to submit a report that includes recommendations for future reef construction designs to the Commission. This final report shall focus on the success or failure of the reef design.

~~CONDITION C: KELP REEF MITIGATION~~

~~The permittee shall, in consultation with the Executive Director, select a site and construct an artificial reef as mitigation for the resource losses at the San Onofre Kelp Bed (SOK) caused by the San Onofre Nuclear Generating Station (SONGS). The reef shall be designed to replace the lost and damaged resources at the San Onofre kelp Bed Reef and produce a persistent giant kelp forest and associated ecosystem. The reef shall be located in the vicinity of the SONGS, but outside the influence of the SONGS discharge plume and water intake.~~

~~After selecting potential sites, and conducting a pre-construction site assessment at these potential sites, the permittee shall select a site and design a reef which meets the standards and objectives listed below. The permittee shall submit the final reef plan to the Commission for its review and approval.~~

~~1.0 SITE SELECTION~~

~~Three or more potential reef sites shall be selected based on, but not limited to, the following criteria:~~

~~1) Location as near as possible to the San Onofre Kelp Bed, and preferably between Dana Point (Orange Co.) and the Pendleton Artificial Reef (San Diego Co.), but outside the influence of the SONGS discharge plume and water intake;~~

~~2) Minimal disruption of natural reef or cobble habitats and sensitive or rare biotic communities;~~

~~3) Suitable substrate with low mud and/or silt content (e.g. hard-packed fine to coarse grain sand, exposed cobble or bedrock without an established biological community, or cobble or bedrock covered with a thin layer of sand);~~

~~4) Location at a depth locally suitable for kelp growth and recruitment;~~

~~5) Location near a persistent natural kelp bed;~~

~~6) Location away from sites of major sediment deposition;~~

~~7) Minimal interference with uses such as vessel traffic, vessel anchorage's, commercial fishing, mariculture, mineral resource extraction, cable or pipeline corridors;~~

~~8) Location away from power plant discharges, waste discharges, and dredge spoil deposition sites;~~

~~9) Location that will not interfere with or adversely affect resources of historical or cultural significance such as shipwrecks and archeological sites.~~

~~1.1 Preconstruction Site Assessment~~

~~The permittee shall obtain site-specific field information, over a period of one year, at each of the three or more potential reef sites which best meet the above criteria. This field information shall be used in both the site selection and design of the reef. Field information shall: (1) include a description of existing biota at the site, (2) provide a reasonable prediction of the likelihood that a healthy kelp bed will be established and persist, (3) provide a reasonable prediction of the extent of rock burial due to sediment deposition and/or sinking into soft sediment, and (4) provide a prediction of the effect of the reef on local sand transport and local beaches.~~

~~The specific field information to be gathered, and the methods for gathering and analyzing it, shall be approved by the Executive Director. At the conclusion of this pre-construction assessment, the permittee shall select the most suitable site to build the reef, subject to the review and approval of the Executive Director, in consultation with the resource agencies. The site shall be submitted to the Coastal Commission, for its review and approval, as part of the artificial reef plan described in Condition C-2 below.~~

~~2.0 REEF DESIGN AND FINAL PLAN~~

~~Following the preconstruction site assessment, and within 18 months of the effective date of this condition, the permittee shall submit to the Commission, for review and approval, an artificial reef plan, designed to: (1) replace the damaged resources (as identified by the MRC) at the San Onofre Kelp Reef and (2) produce a persistent, healthy giant kelp forest and associated ecosystem. If the Executive Director determines that specific information is needed to evaluate whether the reef design will meet the goals and standards set forth in this condition, the Executive Director may direct the permittee to provide this information. The Executive Director, in evaluating the reef design, will consult with the resource agencies.~~

~~The primary goals of the reef shall be to provide: (1) stable rock surfaces and rock configurations that produce a community of algae and invertebrates similar in composition, diversity and abundance to SOK; (2) adequate conditions for giant kelp recruitment, growth, and reproduction, and (3) adequate conditions for a community of reef-associated biota similar in composition, abundance and diversity to SOK. This design shall meet the following standards:~~

~~1) The reef shall be constructed of rock determined to be suitable to sustain a kelp forest and a community of reef associated biota similar in composition, abundance and diversity to SOK. Additional devices may also be used to anchor kelp.~~

~~2) The total areal extent of the kelp reef shall be no less than 300 acres (120 hectares).~~

~~3) The 300 acre reef shall be covered by at least 200 acres (80 ha) of exposed rock substrate. Should the Executive Director determine that more rock coverage is necessary to meet the above goals, the Executive Director may require that the design include the additional coverage recommended.~~

~~4) The reef design shall take into account sediment deposition characteristics of the site, so that 200 acres of exposed stable rock substrate will be permanently present, be sufficiently free of scouring to support a diverse and stable community of attached biota, and allow kelp to become established and persist.~~

~~3.0 KELP REEF CONSTRUCTION~~

~~The reef shall be constructed in two phases. The first phase shall cover an area large enough to represent the important processes affecting a large 300 acre (120 ha) reef, but no larger than necessary in the event there are major problems with the initial design. The proposed size of the first phase reef shall be included in the reef plan submitted to the Commission. This phase shall be monitored for at least 3 years to determine if the design is likely to meet the goals and standards set forth in this condition, and determine that the reef does not interfere with local sand transport. Management techniques shall be tested during this phase to determine if such techniques will better ensure that the goals and standards will be met. At the conclusion of this initial monitoring period, the permittee shall submit any recommendations for changes to the design to the Coastal Commission for its review and approval. Construction of the remaining portion of the reef shall be completed no later than 6 years after the effective date of this condition.~~

~~The artificial reef shall be constructed according to the approved design, including location, depth, overall rock coverage, rock size, dispersion of rocks, and rock relief. A post-construction survey shall be carried out to demonstrate that the reef was built to approved specifications. If the Executive Director determines that the reef was not built to specifications, the permittee shall modify the reef to meet the approved specifications.~~

~~4.0 MONITORING AND REMEDIATION~~

~~The permittee is fully responsible for any failure to meet the standards and goals set forth in this condition during the full operational years of SONGS Units 2 and 3 as defined in Condition II-A-3.0. Should the Executive Director find that the goals and standards set forth in this condition have not been met, the permittee must immediately undertake necessary modifications to the reef design or other remediation determined by the Executive Director to be necessary to meet the standards and goals. If the permittee does not agree that the standards and goals have not been met, the matter may be set for hearing and disposition by the Commission.~~

~~4.1 Monitoring~~

~~Monitoring shall be implemented as described in Condition II-D to: (1) insure that the performance standards of this condition are met, (2) determine if the mitigation successfully replaces the lost and damaged resources in the San~~

~~Onofre Kelp Bed Reef, and (3) determine the reasons why standards have not been met, so that remediation will be successful. The monitoring program shall be designed to assess whether the performance standards listed below have been met.~~

~~4.2 Performance Standards~~

~~a. Substrate. At least 90% of the 200 acres (80 ha) of exposed rock substrate must remain available for attachment by reef biota. If, at any time, more than 10% of the reef should become covered by sediment, or become unsuitable for growth of attached biota due to scouring, and there is no sign of recovery within 3 years, as determined by the Executive Director, more rock shall be added to the reef to replace the substrate lost. Surveys to monitor exposed rock substrate availability shall begin immediately after construction is complete and shall continue for the full operational life of SONGS Units 2 and 3.~~

~~b. Kelp Bed. Kelp recruitment experiments to determine the best method of establishing kelp on the reef shall be carried out in the first phase. The experiments shall provide a basis for future kelp establishment efforts should adequate natural recruitment fail to occur. Within 3 years of construction of the second phase, the Executive Director shall evaluate the status of kelp on the artificial reef. If 60% of the reef is not covered with a self-sustaining medium to high density kelp bed (defined as more than 4 adult plants/100 m2 of substrate), the reason for failure of the kelp bed to become established shall be determined, and an effort begun to establish or augment kelp on the reef. The experimental method determined by the Executive Director to be most likely to be successful and reliable shall be employed until kelp coverage meets the above standard, or until 5 years after establishment or augmentation is first attempted. If oceanographic conditions are unfavorable to kelp during part of this period, the Executive Director may direct the permittee to defer the effort to establish kelp.~~

~~The reef shall sustain an average kelp coverage of 60% for the full operational life of SONGS units 2 and 3. If the long-term average kelp coverage does not meet this standard, the permittee shall undertake feasible corrective action, as identified by the Executive Director, to restore the kelp coverage to 60X. This may entail adding more rock to the reef. If, during the period of time of the full operational life of SONGS units 2 and 3, coverage of medium to high density kelp falls below 30% of the reef for two consecutive years, the Commission staff will, at the permittee's expense, evaluate the general state of kelp in the region. If the decline is region-wide, no attempt to correct the situation shall be required. If the decline is confined to the artificial reef, the permittee shall undertake feasible corrective action, as identified by the Executive Director, to restore the kelp coverage to 60%~~

~~c. Fish. Within 10 years of reef construction, the standing stock of fish at the reef shall be at least 28 tons. The MRC determined that this amount of reduction in the kelp bed fish biomass was caused by the operation of SONGS. The fish biota shall demonstrate the following characteristics:~~

~~1) The resident fish assemblage shall have a total density and number of species similar to natural reefs within the region.~~

~~2) Fish reproductive rates shall be similar to natural reefs within the region.~~

~~3) The total density and number of species of young-of-year fish (fish in the first year after settling) shall be similar to natural reefs within the region.~~

~~4) Fish production shall be similar to natural reefs within the region.~~

~~d. Benthos. Within 10 years of reef completion, the benthic community shall demonstrate the following characteristics:~~

~~1) The benthic community (both algae and macroinvertebrates) shall have a total density and number of species similar to natural reefs within the region.~~

~~2) The benthic community shall provide food-chain support for fish similar to natural reefs within the region.~~

~~3) The important functions of the reef shall not be impaired by undesirable or invasive benthic species (e.g. urchins, Cryptoarachnidium).~~

~~Samples taken at reference natural kelp reef sites shall be used to determine the similarity of each variable listed above for natural reefs within the region. The standard of comparison, i.e. the measure of similarity to be used, shall be specified in the work program (see Condition D). If the fish and benthos standards listed above are not met within 10 years after reef construction, the permittee shall be responsible for any corrective action the Executive Director deems appropriate and feasible.~~

CONDITION D: ADMINISTRATIVE STRUCTURE

1.0 ADMINISTRATION

Commission staff will, under the direction of the Executive Director, review all the permittee's activities such as mitigation, monitoring, management, construction, and remediation identified and required by Conditions II-A through C. The Executive Director shall consult with state and federal resource agencies to obtain scientific advice on the design, implementation and monitoring of the wetland restoration, behavioral barriers, and experimental reef for kelp.

2.0 *MITIGATION PROJECT* REVIEW

If requested by the Commission, a duly noticed public workshop will be convened *up to once a* year to review the status of the mitigation projects. The Commission *staff* will seek input from the permittee, representatives of the resource agencies, and the public.

The permittee will give a presentation on the previous year's activities; overall status of the mitigation projects; identify problems and successes related to the project plans, goals, and standards; make recommendations for resolving any outstanding issues; and review the next year's program.

The Executive Director *may* utilize information presented at the public review, as well as any other relevant information, to determine whether any or all of the wetland restoration performance standards have been met, whether revisions to these standards are necessary, and whether remediation is required for the wetland restoration project. Recommended revisions shall be subject to the Commission's review and approval.

~~CONDITION D: ADMINISTRATIVE STRUCTURE~~

~~1.0 ADMINISTRATION~~

~~Personnel with appropriate scientific or technical training and skills will, under the direction of the Executive Director, oversee the mitigation and monitoring functions identified and required by conditions II-A through C. The Executive Director will retain approximately two scientists and one administrative support staff to perform this function.~~

~~This technical staff will oversee the preconstruction and post-construction site assessments, mitigation project design and implementation (conducted by permittee), and monitoring activities (including plan preparation); the field work will be done by contractors under the Executive Director's direction. The contractors will be responsible for collecting the data, analyzing and interpreting it, and reporting to the Executive Director.~~

~~The Executive Director shall convene a scientific advisory panel to provide the Executive Director with scientific advice on the design, implementation~~

~~and monitoring of the wetland restoration and artificial reef. The panel shall consist of recognized scientists, including a marine biologist, an ecologist, a statistician and a physical scientist.~~

~~2.0 BUDGET AND WORK PROGRAM~~

~~The funding necessary for the Commission and the Executive Director to perform their responsibilities pursuant to these conditions will be provided by the permittee in a form and manner determined by the Executive Director to be consistent with requirements of State law, and which will ensure efficiency and minimize total costs to the permittee. The amount of funding will be determined by the Commission on a biennial basis and will be based on a proposed budget and work program, which will be prepared by the Executive Director of the Commission. If the permittee and the Executive Director cannot agree on the budget or work program, the disagreement will be submitted to the Commission for resolution~~

~~The budget to be funded by the permittee will be for the purpose of reasonable and necessary costs to retain personnel with appropriate scientific or technical training and skills needed to assist the Commission and the Executive Director in carrying out the mitigation and lost resource compensation conditions (II-A through C) approved as part of this permit action. In addition, reasonable funding will be included in this budget for necessary support personnel, equipment, overhead, consultants, the retention of contractors needed to conduct identified studies, and to defray the costs of members of any scientific advisory panel(s) convened by the Executive Director for the purpose of implementing these conditions.~~

~~Costs for participation on any advisory panel shall be limited to travel, per diem, meeting time and reasonable preparation time and shall only be paid to the extent the participant is not otherwise entitled to reimbursement for such participation and preparation. Total costs for such advisory panel shall not exceed $100,000 per year adjusted annually by any increase in the consumer price index applicable to California.~~

~~The work program will include:~~

~~a. A description of the studies to be conducted over the subsequent two year period, including the number and distribution of sampling stations and samples per station, methodology and statistical analysis (including the standard of comparison to be used in comparing the mitigation projects to the reference sites.)~~

~~b. A description of the status of the mitigation projects, and a summary of the results of the monitoring studies to that point.~~

~~c. A description of the performance standards that have been met, and those that have yet to be achieved.~~

~~d. A description of remedial measures or other necessary site interventions.~~

~~e. A description of staffing and contracting requirements.~~

~~f. A description of the Scientific Advisory Panel's role and time requirements in the two year period.~~

~~The Executive Director may amend the work program at any time, subject to appeal to the Commission.~~

~~3.0 ANNUAL REVIEW~~

~~A duly noticed public workshop will be convened and conducted by the Executive Director or the Commission each year to review the status of the mitigation projects. The meeting will be attended by the contractors who are conducting the monitoring, appropriate members of the Scientific Advisory Panel, the permittee, Commission staff, representatives of the resource agencies (CDFG, NMFS, USFWS), and the public. Commission staff and the contractors will give presentations on the previous year's activities, overall status of the mitigation projects, identify problems and make recommendations for solving them, and review the next year's program. The permittee shall report on the status of the behavioral barrier devices.~~

~~The public review will include discussions on whether the artificial reef and wetland mitigation projects have met the performance standards, identified problems, and recommendations relative to corrective measures necessary to meet the performance standards. The Executive Director will utilize information presented at the annual public review, as well as any other relevant information, to determine whether any or all of the performance standards have been met, whether revisions to the standards are necessary, and whether remediation is required. Major revisions shall be subject to the Commission's review and approval.~~

~~The mitigation projects will be successful when all performance standards have been met each year for a three year period. The Executive Director shall report to the Commission upon determining that all of the performance standards have been met for three years and that the project is deemed successful. If the Commission determines that the performance standards have been met and the project is successful, the monitoring program will be scaled down, as recommended by the Executive Director and approved by the Commission. A public review shall thereafter occur every five years, or sooner if called for by the Executive Director. The work program shall reflect the lower level of monitoring required. If subsequent monitoring shows that a standard is no longer being met, monitoring may be increased to previous levels, as determined necessary by the Executive Director.~~

~~The Executive Director may make a determination on the success or failure to meet the performance standards or necessary remediation and related monitoring at any time, not just at the time of the annual public review.~~

Appendix D

AN UPDATED ESTIMATE OF THE EXTENT OF SONGS' IMPACT ON GIANT KELP BASED ON NEW INFORMATION

Summary

Using the recommendations of an Independent Review Panel, the staff scientists estimated the operation of SONGS Units 2 and 3 results on average in a 122-acre reduction in the size of the San Onofre kelp bed. This estimate is based on kelp data collected with sidescanning sonar. Applying the same analytical methods to kelp abundance data collected with downlooking sonar produces an estimated loss of 179 acres of kelp. Both estimates use data on kelp abundance that are not standardized to the area of hard substrate. Standardizing the area of kelp loss to the area of hard substrate greatly underestimates the effects of SONGS operation on kelp because it assumes that SONGS has no effect on the area of hard substrate. However, analyses using recently obtained information on hard substrate implicate SONGS as the cause of a 167 acre loss of hard substrate in SOK. These results, which have the same scientific standing as SCE's new estimates of kelp impacts, reinforce the recommendation of the Independent Review Panel to focus estimates of kelp loss directly on kelp abundance without adjustments for area of hard substrate.

Introduction

The Marine Review Committee (MRC) was charged with the responsibility of identifying and quantifying the adverse impacts caused by operation of the SONGS. To fulfill this charge the MRC used a scientific approach that relied on both survey and experimental data to document the extent of SONGS' impacts and the mechanisms that produced them. In general, these studies had a single basic design. The MRC established the pattern of distribution and abundance of marine populations near SONGS (**impact** site) and at a **control** site, **before** the operation of Units 2 and 3, and **after** full operation of these two units began. Because data were collected at the same time at both the control and impact sites the data collection was **paired**. This study design is referred to as BACIP (Before-After/Control-Impact Paired) (Stewart–Oaten et al. 1986)[2]. The resulting data were analyzed using the BACIP design to determine the type and extent of adverse impacts.

In 1989 the MRC concluded that a turbid plume produced by SONGS' once-through cooling water discharges caused substantial adverse effects to giant kelp, kelp-bed fish, and kelp-bed invertebrates within the San Onofre kelp bed (SOK) (MRC 1989a). The

[2] See Appendix A for a complete listing of all references cited.

MRC's estimate of the loss of giant kelp was based largely on downlooking sonar estimates of kelp density obtained between 1982 and 1988, excluding the start-up period of 1983–1986. By comparing the average area covered by moderate to high density kelp (greater than 4 plants per 100 m^2) at SOK and at the nearby control site, San Mateo kelp bed (SMK), in three surveys conducted before SONGS began operating (February 1982 to July 1983) and three surveys after SONGS began operating (December 1986 to February 1988), the MRC estimated that area of kelp in SOK (relative to SMK) declined by 200 acres.

These statistical estimates were supported by observational or experimental studies of the likely mechanism(s), thus linking them to the operation of SONGS. The relevant results include the following:

1) SONGS' turbid plume has a higher concentration of suspended particles (also termed seston) than the ambient waters. These particles come from ambient waters inshore of SOK which are moved offshore by currents caused by the discharge through the diffusers, and also from bottom waters entrained by the plume (MRC 1989b).

2) This turbid plume results in a 48% increase in seston flux in the area of SOK near the discharge compared to the area down-coast and more distant from the discharge (MRC 1989b).

3) The turbid plume resulted in a 6% to 16% decrease in light reaching the ocean floor in SOK (MRC 1989a&b).

4) It was shown experimentally that small microscopic kelp plants had poorer recruitment, growth and survival because of the reduced light and increased seston flux (MRC 1989c).

5) Observation and experiments showed a reduction in the recruitment of larger non-microscopic young kelp stages and an 84% to 90% reduction in the recruitment of adult kelp plants (MRC 1989c).

The MRC concluded there was strong evidence that the statistical changes in kelp abundance were the result of SONGS' operation. Furthermore, other observations in SOK were consistent with an increase in sedimentation rate from the discharge plume. The MRC showed that large invertebrates that live on the hard substrate in SOK suffered a decline in density that averaged 80% in the up-coast half of SOK nearer SONGS' diffusers and 60% in the down-coast half of SOK (MRC 1989d).

The MRC collected statistical evidence of a loss of hard substrate in SOK ranging from 4.5% to 15% of the kelp bed area, caused by increased sedimentation that covered the rocks (MRC 1989e). The MRC decided not to report this as an effect of SONGS' discharge plume because it did not collect experimental evidence to determine this unequivocally. The MRC did conclude that "of the various hypotheses that have been

erected to explain the deposition of mud in the San Onofre Kelp Forest, one which includes the San Onofre Nuclear Generating Station as a contributing cause seems most likely, but the evidence is circumstantial. On the other hand, none of the natural hypotheses that have been put forward accounts for the elevated organics in the anomalous muddy deposits." (MRC 1989e).

Thus, all of the MRC's conclusions concerning SONGS' effect on hard substrate and the San Onofre kelp bed community were based on statistical results from the BACIP design as well as experimental and observational data identifying the underlying mechanisms.

As part of its water quality compliance monitoring, the permittee has continued to conduct downlooking sonar and sidescanning sonar surveys at SOK and SMK using the same data collection methods as those of the MRC. However, unlike the MRC, the permittee has not collected data on other biological (i.e. kelp-bed fish, kelp-bed invertebrates) and physical (i.e. turbidity, sedimentation rates) characteristics of the kelp bed community, nor has the permittee conducted any experiments to evaluate potential mechanisms for changes in kelp abundance or these other characteristics.

In September 1995 the permittee submitted a report to the Coastal Commission staff that used the new sonar data to extend the MRC data set on giant kelp (a revised version of this report, hereafter referred to as Dean and Deysher (1996) was submitted in April 1996). Dean and Deysher (1996) used a BACIP analysis on data collected through July 1995 that was similar, though not identical, to the analysis used by the MRC. The authors concluded that the average loss of medium to high density kelp at SOK caused by the operation of SONGS was between 48 and 110 acres (the size of the impact varied depending on whether kelp abundance was calculated using downlooking or sidescanning sonar and on the assumptions used concerning changes in potentially confounding factors such as sea urchins and the amount of hard substrate). Because the permittee did not conduct experimental studies or collect data on other physical and biological components of the kelp bed, Dean and Deysher (1996) could only speculate on the potential causes that could lead to a lessening of SONGS' impact on giant kelp as indicated by the extended data set.

Coastal Commission staff and the permittee jointly agreed to have Dean and Deysher's report reviewed by an independent three-member panel (consisting of a kelp ecologist, a statistician, and an expert in impact assessment) chosen by the permittee and the Commission staff. Although the independent panel agreed with Dean and Deysher's qualitative conclusion that the effects of SONGS' discharges on giant kelp were substantially less than those estimated by the MRC, it did not endorse all of Dean and Deysher's analyses and it made recommendations for future analyses aimed at determining the area of kelp lost at SOK (relative to SMK) as a result of SONGS turbid discharge plume.

As a preamble, the panel noted that "BACIPs require a variety of assumptions for reliable and accurate estimation of impacts," and stated that "[a] difficulty with any analysis is the potential need to correct for localized effects of sea urchin grazing and changes in hard substrate" (Dayton et al. 1996, page 2). The panel's recommendations for future analyses were as follows (Dayton et al. 1986, pages 2 and 5):

1) Use the ratio of the mean area of kelp in SOK/mean area of kelp in SMK for the before and after periods.

2) Focus the analysis directly on kelp abundance, in preference to making adjustments for hard substrate.

3) Estimate impacts by evaluating trends.

4) Use estimates of kelp abundance based on side-scanning sonar.

The staff scientists followed all four recommendations in its analyses, below, of the permittee's extended data set on kelp abundance. Following Dean and Deysher (1996), the staff scientists made a correction for sea urchin effects. The independent panel noted that calculating confidence intervals is problematic in this situation and the staff scientists have not attempted to do so here.

Methods

Time periods considered

The staff scientists considered June 1978 to July 1983 as SONGS pre-operational period, and December 1986 to Jan 1996 as SONGS operational period. The period between April 1984 and April 1986 after SONGS began operation was designated by the MRC as the start-up period and data from this period were not included in the BACIP analyses.

Confounding effects of sea urchins

There is evidence that differential grazing by sea urchins in SOK and SMK caused changes in kelp unrelated to the effect of SONGS. Sea urchin grazing during the operational period caused a substantial loss in the area of medium to high density kelp in SMK but not in SOK. This differential grazing is unrelated to the operation of SONGS. Quantitative data on the differential effects of sea urchin grazing were not collected by the permittee throughout the operational period. The only quantitative data available were collected in the fall of 1995 by the Commission staff scientists who surveyed the abundance of sea urchin grazing in SOK and SMK. Results from this survey showed that the size of SMK was reduced by approximately 75 acres due to sea urchin grazing; no such reduction was observed in SOK. Dean and Deysher (1996) added 50 acres to the area of SMK beginning in November 1992 to account for the confounding effects of sea urchin grazing in their BACIP analysis that used

downlooking sonar estimates of kelp. This estimate likely underestimates the confounding effects of sea urchin grazing because: (1) substantial kelp loss at SMK due to sea urchin grazing was observed by SCE' contractors during 1986 to 1988 (Elliot 1992, North and Curtis 1995), and (2) sea urchin grazing caused substantial kelp loss in the offshore portion of SOK during SONGS pre-operational period but not during the extended SONGS operational period (North and Curtis 1995). Unfortunately, the data needed to properly correct for the confounding effects of sea urchin grazing in the BACIP analyses do not exist. Therefore, to avoid further dispute, the staff scientists used the technique of Dean and Deysher (1996) to correct for the confounding effects of sea urchin grazing.

Results

Estimates based on approach recommended by the Independent Panel

Estimates of the area of medium to high density kelp in SOK and SMK using sidescanning sonar that are corrected for the confounding effects of sea urchin grazing are shown in Figure 1a. During the pre-operational period the average area of medium to high density kelp in SOK was 249 acres, 1.84 times greater than the 135 acres in SMK (Figure 1b). The average area of kelp in SOK during the period beginning December 1986 was 213 acres, 14 percent smaller than that observed during the pre-operational period. By contrast, the average area of kelp in SMK during this period was 182 acres, 35 percent larger than that observed during the pre-operational period. Based on these data the BACIP analysis predicts that the average area of medium to high density kelp in SOK during the period beginning December 1986 would have been 332 acres in the absence of SONGS' operation. This area is 56 percent larger than was actually observed in SOK and reflects a loss of 121 acres of medium to high density kelp.

The independent review panel suggested that effect size be evaluated by analyzing trends (a relationship between the effect size and time since SONGS began operation). the staff scientists did this by calculating the running average of the area of kelp lost for each date in the operational period, and, as noted by the panel the staff scientists found that the effect declined over time (Figure 2). The staff scientists used a LOWESS procedure (a smoothing technique used for non-linear relationships) to fit a line to the data. This line indicated that the area of kelp lost (effect size) leveled off during the mid part of the operational period through the most recent survey. The staff scientists then used a series of linear regressions to determine the specific survey at which the leveling off began and calculated the mean effect size since this survey. These analyses indicate that 122 acres of kelp area will be lost as long as SONGS continues to operate at present levels.

Estimates based on independent panel recommendations, but using down-looking sonar

The MRC and the permittee used two kinds of data to estimate kelp abundance: downlooking sonar data and sidescanning sonar data. There are advantages and disadvantages to each method that have been recognized by both the MRC and the permittee. Downlooking sonar provides the more accurate estimate of kelp abundance and has been calibrated to actual counts by divers. By contrast, side-scanning sonar has never been calibrated to diver counts and cannot distinguish between giant kelp and certain other large brown algae. The only advantage of sidescanning over downlooking sonar estimates is that sidescanning sonar data were collected for a longer period prior to the startup of SONGS; this is the reason the independent review panel recommended its use. A longer data set should provide a better estimate of average kelp abundance in SOK and SMK prior to SONGS startup. This is important because the ratio of kelp area in SOK/kelp area in SMK is a critical element in estimating the size of SONGS' impact on kelp using BACIP. The staff scientist's analyses, however, show that the ratio of kelp area in SOK to kelp area in SMK prior to SONGS startup is very similar using both methods (2.00 vs. 1.84 for downlooking and sidescanning sonar, respectively). Thus, the fact that the sidescanning sonar record provides a longer data set does not appear to be a scientifically sound reason for preferring it over the downlooking sonar data for estimating kelp loss. Since downlooking sonar provides more reliable estimates of kelp abundance, results using the downlooking sonar data are presented below.

Estimates of the area of medium to high density kelp in SOK and SMK using downlooking sonar, corrected for the confounding effects of sea urchin grazing, are shown in Figure 3a. The average area of kelp in SOK did not change after SONGS began operating; there were on average 176 acres of medium to high density kelp in SOK during both the pre-operational and operational periods (Figure 3b). By contrast, the average area of kelp in SMK during the operational period was more than twice that observed during the pre-operational period (175 acres in operational period vs. 87 acres in pre-operational period). Based on these data the BACIP analysis predicts that the average area of medium to high density kelp in SOK during the period beginning December 1986 would have been 354 acres in the absence of SONGS' operation (Figure 3b). This is about twice the area that was actually observed in SOK and reflects a loss of 178 acres of medium to high density kelp.

The average area of kelp lost as a result of SONGS operation as estimated from downlooking sonar data has remained relatively constant since May 1994 (Figure 4). Using the same regression methods employed for the sidescanning sonar data, the staff scientist's analyses found that 179 acres of kelp area will be lost as long as SONGS continues to operate at present levels.

Effects of SONGS operation on the area of hard substrate in SOK

In the San Onofre region, giant kelp requires hard substrate to grow. In estimating the area of kelp lost due to SONGS operations the MRC standardized the area of kelp to the area of hard substrate. It did so to ensure that projected kelp coverage did not exceed the available substrate . By standardizing the area of kelp to the area of hard substrate the MRC implicitly assumed that the operation of SONGS did not affect the area of hard substrate in SOK. The Independent Review Panel questioned this assumption and recommended that estimates of kelp loss be based directly on the area of kelp without making adjustments for the area of hard substrate. The reason for not adjusting the area of kelp to the area of hard substrate is that if the operation of SONGS does reduce the area of hard substrate in SOK, standardizing kelp area to the area of hard substrate would result in an underestimate of the impact of SONGS on kelp.

Recent analyses by staff scientists that incorporate data (unavailable to the MRC) on the amount of hard substrate indicate that the operation of SONGS has in fact caused a loss of hard substrate in SOK (Figure 5). During SONGS pre-operational period the area of hard substrate fluctuated similarly at SOK and SMK (Figure 5a). Soon after SONGS started operating SOK and SMK began to display different patterns in changes in the area of hard substrate; hard substrate started to decline in SOK and increase in SMK. Since December 1986 (SONGS Operational Period) there has been an average of 409 acres of hard substrate at SOK, which is 50 acres less than that observed during SONGS pre-operational period. By contrast, the average area of hard substrate at the control site SMK has increased by 70 acres since SONGS began operating (273 acres in the pre-operational period versus 343 in the operational period). The pattern of data in the pre-operational period suggests the substrate data are appropriate for a BACIP analysis, an assumption borne out by more detailed analysis. The BACIP analysis predicts that the average area of hard substrate in SOK during the operational period (beginning December 1986) would have been 576 acres in the absence of SONGS' operation. This area is 41% larger than was actually observed in SOK and reflects a loss of 167 acres of hard substrate.

The average area of hard substrate lost as a result of SONGS operation has remained relatively constant since 1990 (Figure 6). Using the same combination of LOWESS and regression analyses applied to the kelp data from sidescanning and downlooking sonar, the staff scientists estimated the average of the loss of hard substrate to be 169 acres as long as SONGS continues to operate at present levels.

This estimate of lost hard substrate is identical to the permittee's reanalysis of kelp impacts using new data in two respects. It is based on new data collected at the same time and by the same contractors as the new kelp data. More importantly, it is based solely on a BACIP analysis. Both the new kelp and substrate analyses differ from the original MRC studies, which also used the BACIP, but in addition relied on a large body of mechanistic evidence, presented on page two of this appendix. If the permittee's new

estimates of kelp loss are to be accepted, the new estimates of hard substrate loss, which have the same scientific standing, must also be accepted.

Conclusion

Using the Independent Review Panel's preferred recommendations for estimating SONGS' impacts to kelp, the cumulative estimate of the area of medium to high density kelp lost is 121 acres (the projected estimated loss for the operational life of SONGS is 122 acres). An alternative approach that employs the same BACIP method, but uses more reliable downlooking sonar data instead of sidescanning sonar data provides a cumulative estimated loss of 178 acres (the projected estimated loss for the operational life of SONGS using this approach is 179 acres). Similar BACIP analysis on recently obtained data on the area of hard substrate implicate SONGS as the cause of a loss of 167 acres of hard substrate in SOK. Estimates of kelp loss that standardize the area of kelp to the area of hard substrate greatly underestimate the size of SONGS impact on kelp because they incorrectly assume that SONGS has had no effect on the area of hard substrate in SOK.

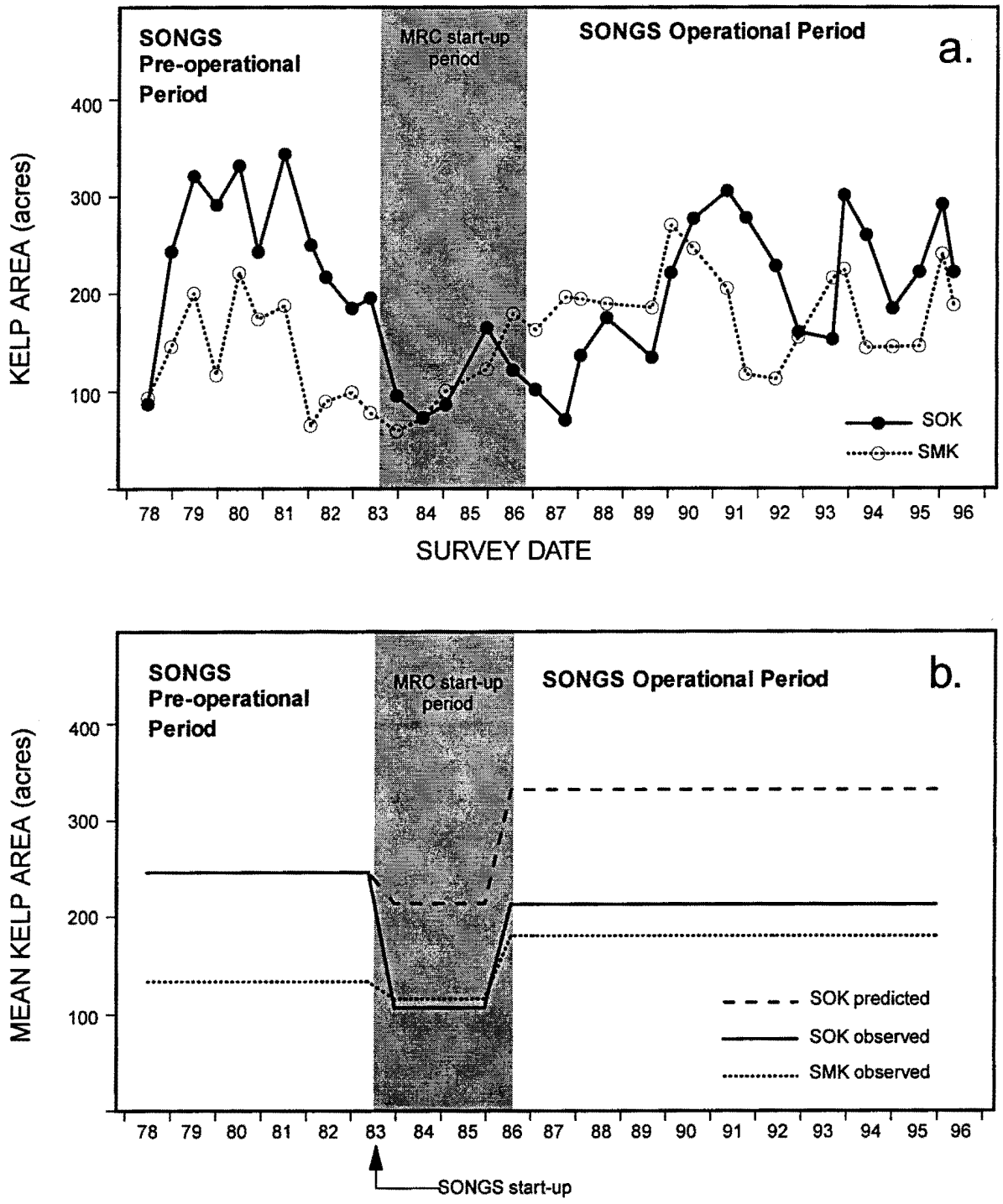


Figure 1. (a) Temporal changes in the area of medium to high density kelp at SOK and SMK as estimated using sidescanning sonar. Data are not adjusted for area of hard substrate, but are adjusted for the confounding effects of sea urchin grazing. (b) Mean areas of medium to high density kelp observed at SOK and SMK for various time periods. Predicted values for mean area of kelp at SOK are based on BACIP.

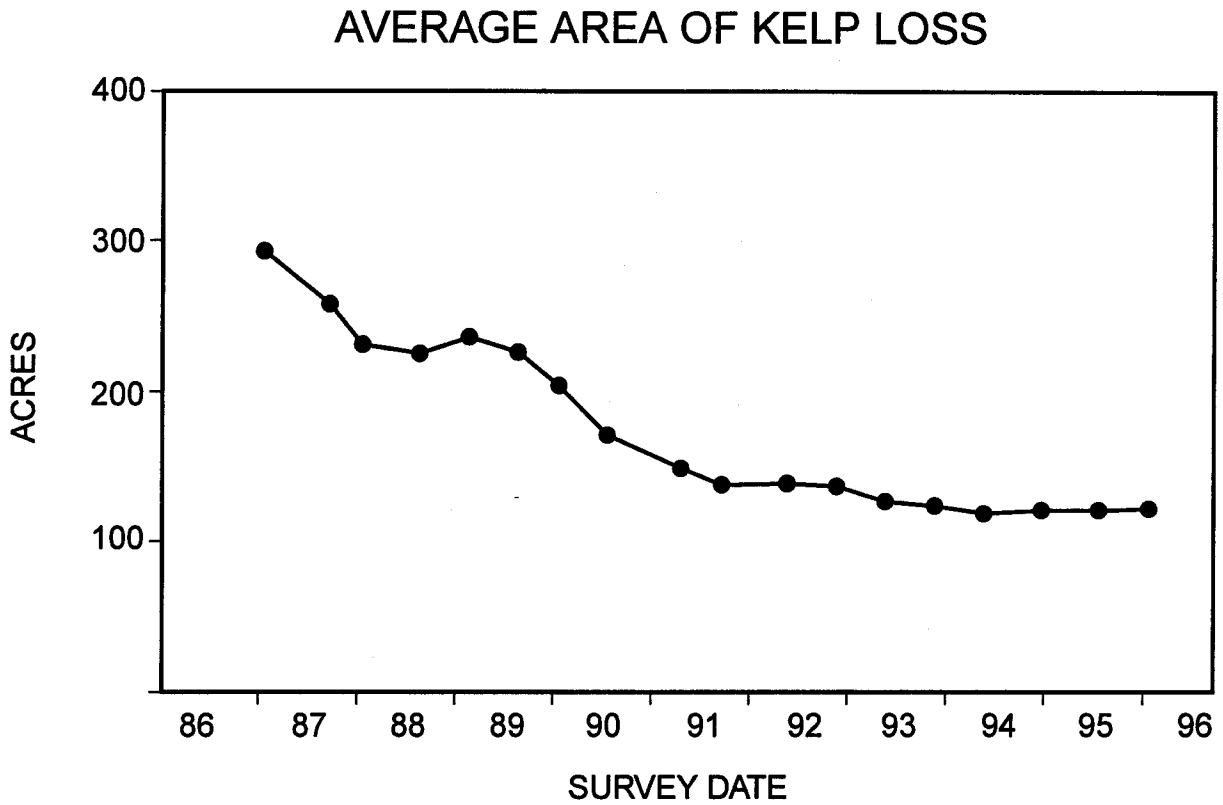


Figure 2. Running averages of area of medium to high density kelp lost in SOK based on sidescanning sonar estimates of kelp abundance.

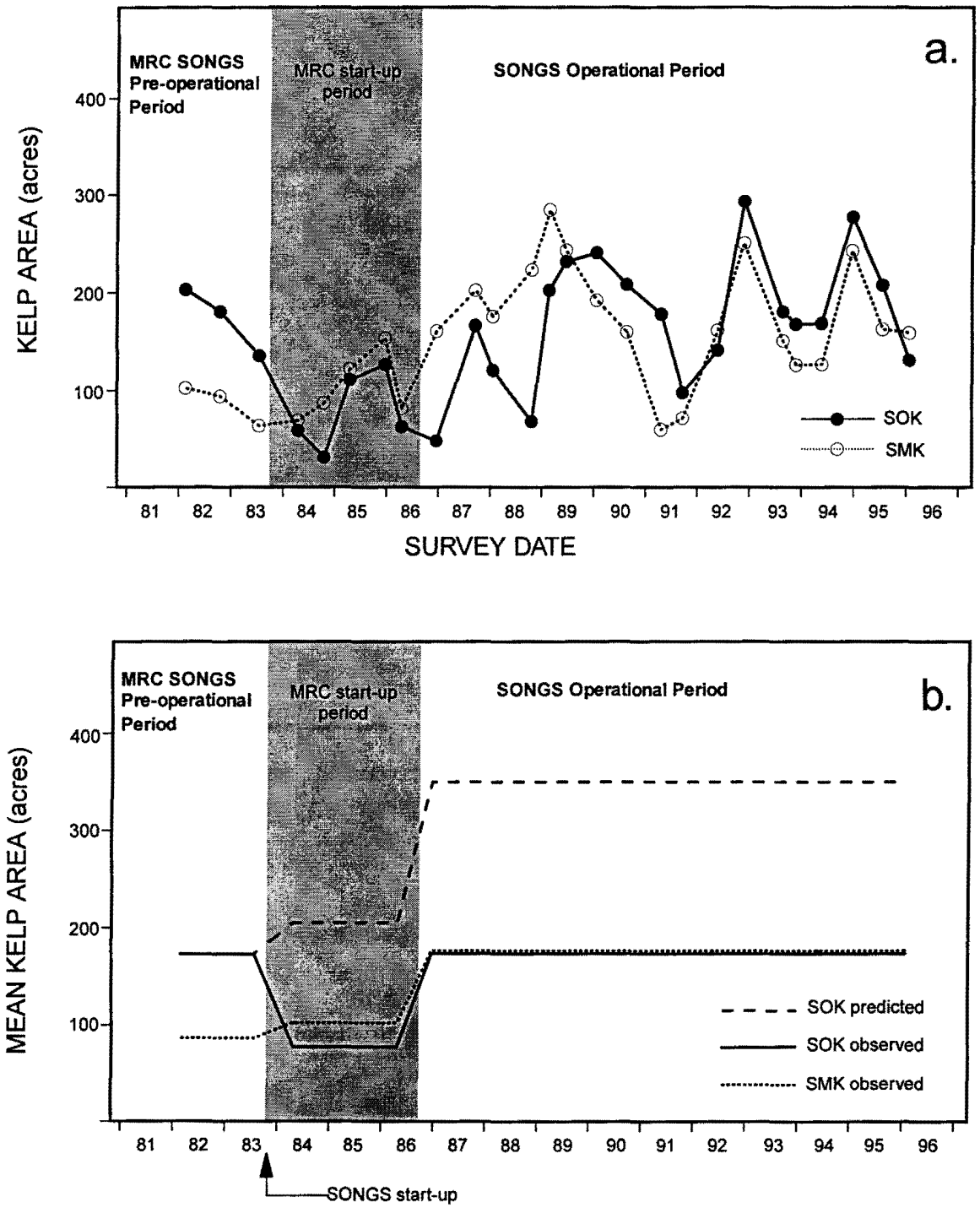


Figure 3. (a) Temporal changes in the area of medium to high density kelp at SOK and SMK as estimated using downlooking sonar. Data are not adjusted for area of hard substrate, but are adjusted for the confounding effects of sea urchin grazing. (b) Mean areas of medium to high density kelp observed at SOK and SMK for various time periods. Predicted values for mean area of kelp at SOK are based on BACIP.

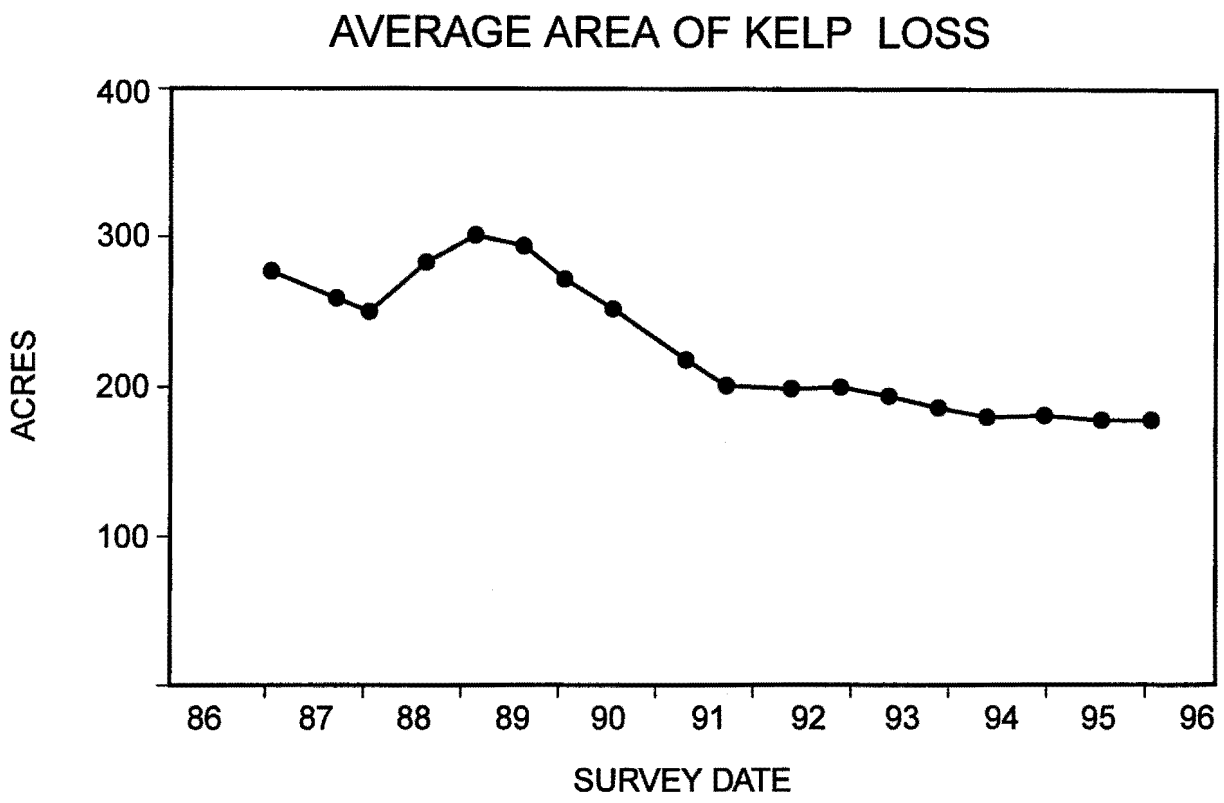


Figure 4. Running averages of area of medium to high density kelp lost in SOK based on downlooking sonar estimates of kelp abundance.

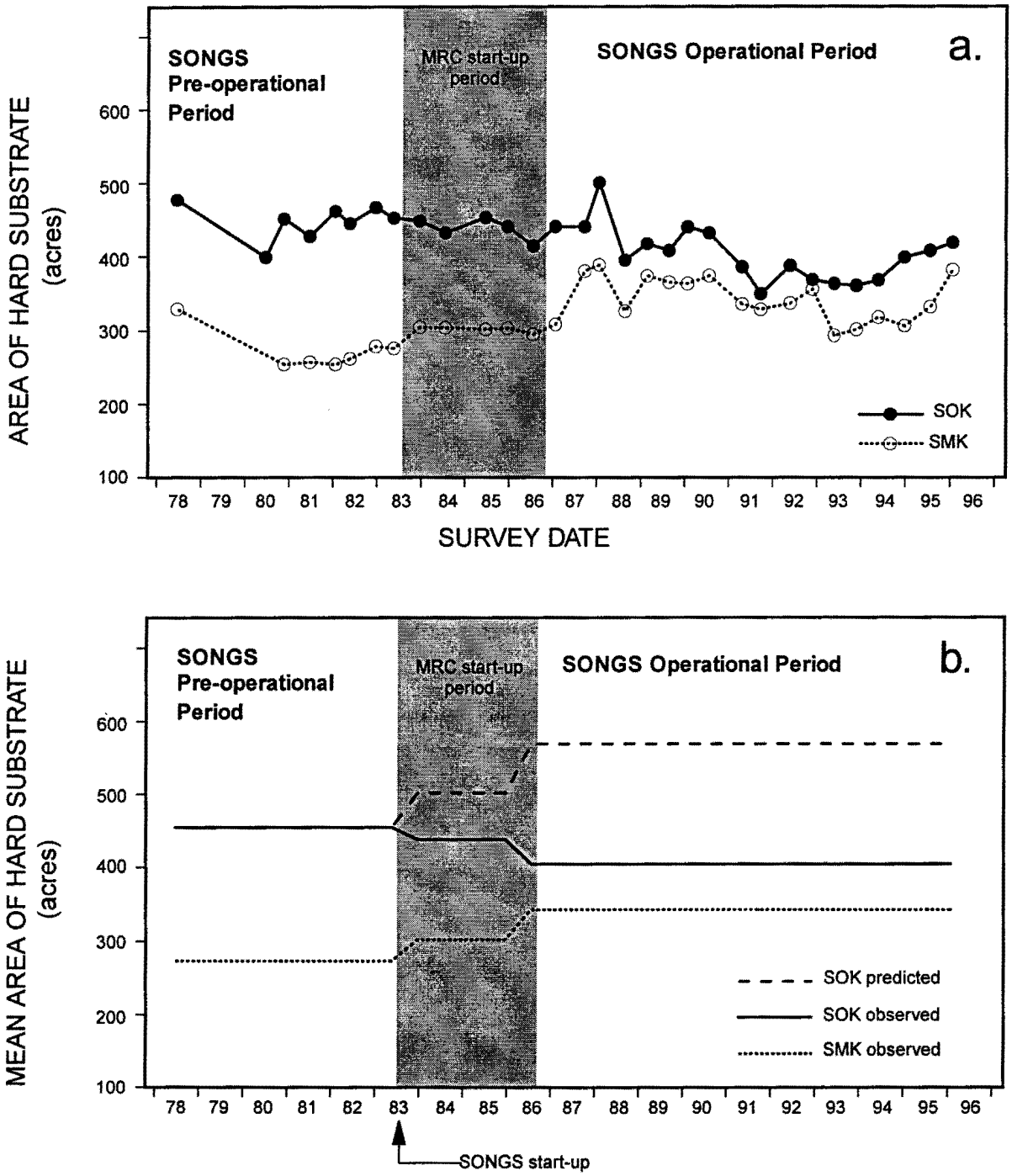


Figure 5. (a) Temporal changes in the area of hard substrate at SOK and SMK as estimated using sidescanning sonar. (b) Mean areas of hard substrate observed at SOK and SMK for various time periods. Predicted values for mean area of hard substrate at SOK are based on BACIP.

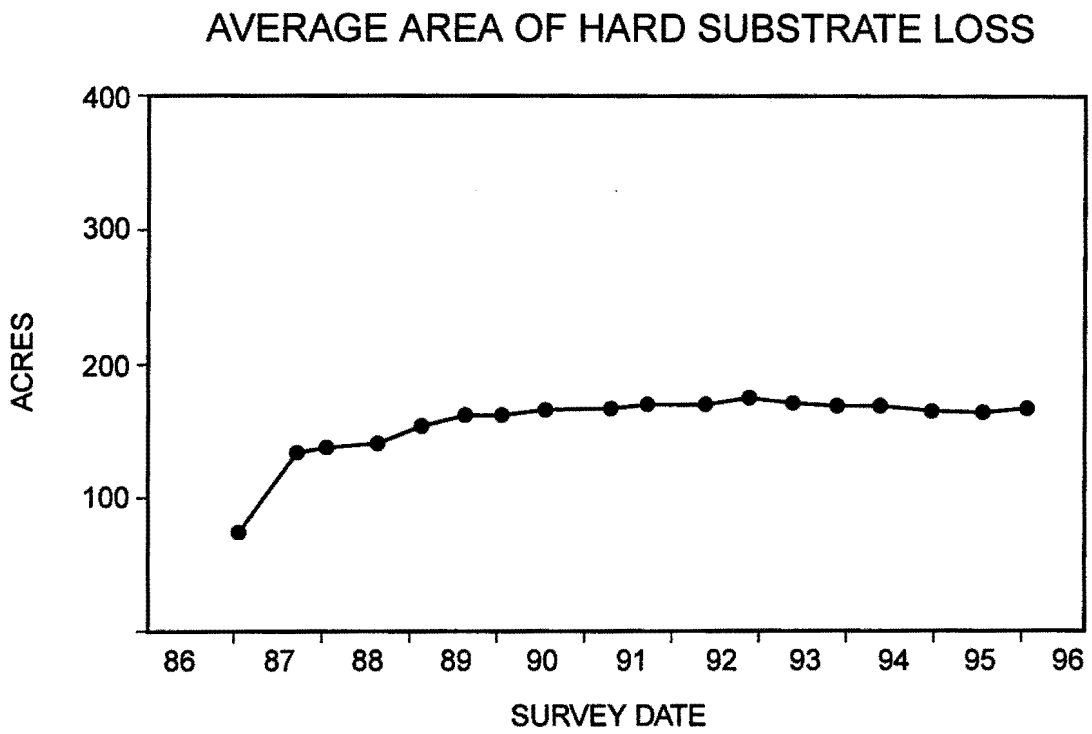


Figure 6. Running averages of area of hard substrate lost in SOK.

Appendix E

SONGS CPUC SETTLEMENT CALCULATIONS

The CPUC calculates the SONGS marine mitigation component of the total SONGS settlement for the period 1996–2003 as follows. Chart notes a $5 million estimate by Edison for post-2003 monitoring costs:

$110.94	million[3]	Direct mitigation costs forecast by permittee for wetlands, reef, fish return & fish hatchery projects
+ 33.28	million	Southern California Edison's standard 30% overhead rate
$144.22	million	
- 11.11	million	Back out "Allowance for Funds Used During Construction"[4]
$133.11	million	
- 22.0	million[5]	Subtract amount categorized in settlement as "sunk costs,"
$111.11	million[6]	
- 5.0	million	Subtract post-2003 monitoring costs estimated by SCE
$106.11	million	ICIP amount incorporated for SONGS mitigation

[3] $110.94 million. Southern California Edison prepared and published this estimate for SONGS mitigation costs in Table II-1 of a document referred to as "Exhibit 39 to CPUC Decision 96-01-011" and titled by Edison as "Nuclear Power SONGS Required Environmental Mitigation Projects, Before the Public Utilities Commission of the States of California," dated December, 1993.

[4] AFUDC: Allowance for Funds Used During Construction. A term used in traditional rate cases. This is an add-on charge to account for the cost to the utility of expending funds in advance of recovery through rates. This factor is removed in the settlement because costs will be recovered as power is sold, not as a function of after-the-fact ratemaking. Previous staff report dated September 24, 1996 included $13.11 million as the adjustment for AFUDC. CPUC staff has corrected this amount to $11.11 million.

[5] $22 million, sunk costs. The SONGS owners did not introduce into the CPUC public record a detailed accounting for these amounts theoretically already spent. CPUC staff indicate that to some extent the amounts placed in the "sunk costs" category are a product of the tradeoffs of the negotiated settlement rather than a true reflection of actual expenditures.

[6] $106.11 million. The SONGS owners will recover this amount during the term of the settlement for mitigation costs but will not be required to return any unspent portion of it to the ratepayers. This amount is placed in the settlement category of "Incremental Costs Incentive Pricing"—or "ICIP"—a catchall term for the operating costs that the SONGS owners were not allowed to recover through the favorable accelerated depreciation method allowed for sunk costs. Southern California Edison's portion (as 75% owner of the SONGS) of this amount is approximately $80 million (ICIP) and approximately $17 million (sunk costs), for a total of approximately $96 million).

Appendix F

COST ESTIMATES USED IN FUNDING OPTION

The following summarizes the Commission's estimated costs for the mitigation requirements of Conditions A, C and D included in the funding option. All estimated costs are in 1997 dollars with no inflation or interest adjustments. Cost estimates do **not** include costs already incurred.

NOTE: The Commission also required the permittee to pay $3.6 million for a mariculture/fish hatchery program, as described in Section 3.0 of Condition C. This cost is in addition to the costs contained in the funding option. Further, this $3.6 million funding requirement is not optional and is therefore not included in the funding option package. However, a summary of all costs for the SONGS mitigation can be found at the end of this appendix.

a) Wetland Restoration Project

The Commission's estimated costs for the wetland mitigation project required in Condition A are derived from the cost analysis prepared for a recent plan at San Dieguito Lagoon. The costs are shown in Table F-1. This plan and cost analysis were prepared for the State Coastal Conservancy and the San Dieguito River Park Joint Powers Authority (JPA) by Moffatt & Nichol Engineers (March 19, 1997).[1]

This plan is appropriate to use for many reasons (see findings for Condition D for more details). First, San Dieguito Lagoon is currently the only site that has been approved by the Commission for the SONGS wetland mitigation project. Second, the Moffatt & Nichol plan calls for substantial restoration, creation and enhancement of wetlands at San Dieguito Lagoon and it is expected to meet the permit requirements. Finally, the plan has been endorsed by the JPA.

b) Kelp Reef Mitigation

The Commission's estimated costs for the kelp reef mitigation project required in Condition C include implementation of the experimental and mitigation reefs, and remediation of the mitigation reef. Contractor start-up costs and construction costs were estimated in consultation with the California Department of Fish and Game.

[1] Moffat & Nichol Engineers, March 19, 1997. Wetland Restoration at San Dieguito Lagoon, Plan C.

The cost estimates shown below in Table F-2 are based on the 16.8 acre experimental reef plan submitted by the permittee and entitled, *San Onofre Marine Mitigation Program: Experimental Reef for Kelp.*[2] Results of the 16.8-acre experimental reef will be used to design the larger mitigation reef. The cost estimates for the mitigation reef are based on a project that constructs a ~~105.2-acre~~ 133.2-acre artificial reef with 67 percent cover of quarry rock, which is 3 feet high. Together the two reefs are intended to provide ~~122~~ 150 acres of kelp bed habitat to compensate for the ~~122~~ 150 acre reduction in the size of the San Onofre Kelp bed (SOK).

c) Monitoring

Information obtained from monitoring the mitigation reef and the wetland restoration projects will be used to evaluate each project's compliance with the performance standards pursuant to Condition A and C. The Commission's estimated costs for the independent monitoring required for the wetland restoration and kelp reef mitigation projects include: (1) costs for sampling at each mitigation site each year for ten years, (2) costs for concurrent sampling at wetland and reef reference sites in years 8, 9, and 10 of the monitoring program, and (3) costs for annual site inspections for years 11 through 20 of the monitoring program.

There are no performance standards for the experimental reef. Information obtained from monitoring the experimental reef will be used to evaluate the success of various reef designs in attaining the physical and biological performance standards for the larger mitigation reef. The costs for monitoring the experimental reef include sampling at the experimental reef site and one control reef each year for ten years.

NOTE: The Commission reduced the monitoring requirement for the experimental reef to five years. Costs have not been adjusted, however, since funding must remain available for any additional experiments deemed necessary by the Executive Director. Any unspent monitoring funds will be returned to the permittee at the end of remediation period.

The costs were estimated in consultation with the University of California and are based on University of California rates for professional research biologists, technicians and students to carry out the sampling programs. Costs also include travel to the study sites, operating expenses and equipment, and moderate indirect costs. The monitoring costs are summarized below in Table F-3.

[2] Submitted by Southern California Edison Company August 16, 1996. In Submittal to Amend and Fulfill Certain Conditions of Coastal Development Permit No. 6-81-330 (SONGS Units 2 & 3); Volume II of III; Section J. 12 pp.

d) Technical Oversight

The Commission's estimated costs for the technical oversight required in Condition D include oversight of the mitigation and monitoring activities implemented pursuant to Conditions A through C. Costs are based on a small staff of scientists, science advisors, and administrative support using rates of comparable civil service classifications. Operating expense and fund administration costs are also included.

The estimated costs, shown in Tables F-4, F-5 and F-6, detail the annual costs for the planning, construction, and ten years of monitoring for the wetland restoration project, experimental kelp reef, and mitigation kelp reef.

NOTE: ~~As now designed the~~ The funding option has to be accepted by the permittee in its entirety for wetland, reef, and monitoring. ~~If the Commission wishes to offer the permittee the choice of using one or two of the trust funds components, the cost figures for monitoring and oversight will need to be increased.~~

Table F-1. Total Estimated Project Cost: Wetland Mitigation Project

		Estimated Cost (Millions)
1	Project design and permits[3]	3.70
2	Construction[3]	
	a) Site access & yard setup	0.43
	b) Training dikes and disposal mounds	0.65
	c) Excavation — east of I5	8.22
	d) Excavation — airfield	6.28
	e) Excavation — channel	1.70
	f) Utility relocation	0.19
	g) Revegetation	2.73
	h) Construction management	2.50
3	Infrastructure improvement[3]	
	a) Slope and scour protection of channel	7.17
	b) Rock protection at I-5	1.95
	c) Retrofit of 4 bridges	1.33
	d) Offsite hauling and disposal	2.36
4	Project management and administration[4]	2.93
5	**TOTAL DESIGN & CONSTRUCTION COST**	**$42.14**
6	Maintenance Fund[5]	9.28
7	Remediation[6] (@ 10% of item 5 cost)	4.21
8	**GRAND TOTAL**	**$55.63**

[3] Source: Moffatt & Nichol Engineers, March 19, 1997. Wetland Restoration at San Dieguito Lagoon, Plan C.
[4] Source: State Coastal Conservancy. Includes oversight of design, environmental review, construction, and 30 years of post-construction maintenance, and remediation.
[5] Source: State Coastal Conservancy. Total lump sum needed to yield an amount to cover 30 years of annual maintenance estimated by Moffatt & Nichol Engineers.
[6] Source: California Coastal Commission.

Table F-2. Total Estimated Project Cost: Kelp Reef Mitigation Project

		Estimated Cost
EXPERIMENTAL REEF		(Millions)
1	Pre-Construction Site Substrate Survey and Project Permits	0.20
2	Contractor start-up cost	0.10
3	Construction for 16.8 acres @ average cost of $124,404/acre	2.09
	Construction Contingency @15%	0.31
	TOTAL EXPERIMENTAL REEF IMPLEMENTATION	**2.70**
MITIGATION REEF		
1	Project design and permits	2.00
2[7]	Contractor Start-up cost	1.00
	Construction for ~~105.2~~ 133.2 acres @ $178,475/acre	~~18.78~~ 23.77
	Construction contingency @ 15%	~~2.82~~ 3.57
3[8]	Construction monitoring (hydrographic surveys)	1.00
4	Management and administration (Implementing Agency) @ 5%	~~1.28~~ 1.57
	TOTAL MITIGATION REEF IMPLEMENTATION	**~~26.88~~ 32.91**
	REMEDIATION[9] (@ 25% of total mitigation reef implementation)	**~~6.72~~ 8.23**
	GRAND TOTAL: MITIGATION REEF PROJECT	**~~$36.30~~ $43.84**

[7] Contractor start-up cost and construction cost per acre based on information from Mr. Dennis Bedford, CA Department of Fish and Game, Artificial Reef Program (Letter from Mr. Bedford to Mr. Zachary Hymanson, CA Coastal Commission; November 8, 1996).
[8] Hydrographic surveys taken during construction are to ensure the reef is built to approved design specifications.
[9] Remediation includes maintenance, reconstruction or augmentation to address performance deficiencies.

Table F-3. Summary of Monitoring Costs (millions)

Wetland Restoration (one site)	2.50
Experimental Reef	2.23
Mitigation Reef	3.35
Total Monitoring Costs	$8.08

Table F-4. Detailed Costs for ~~Monitoring and~~ Technical Oversight of Wetland Restoration

	Planning		Construction		Monitoring (Years 1–7)		Monitoring (Years 8–10)	
Duration (Years)	**3.5**		**2.0**		**7.0**		**3.0**	
	PY	**Annual**	**PY**	**Annual**	**PY**	**Annual**	**PY**	**Annual**
Salaries								
Ecologist	1.00	67,464	1.00	67,464	0.80	53,971	1.00	67,464
Administrative Analyst	0.10	6,293	0.10	6,293	0.10	6,293	0.10	6,293
Clerical	0.25	7,431	0.25	7,431	0.25	7,431	0.25	7,431
Benefits @ 26.8%								
Ecologist		18,080		18,080		14,464		18,080
Administrative Analyst		1,686		1,686		1,686		1,686
Clerical		1,992		1,992		1,992		1,992
Operating Expenses & Equip. ($28,000/Ecologist PY/Yr)		28,000		28,000		22,400		28,000
Scientific Advice (Panel, Reviewers)		50,000		25,000		25,000		50,000
Fund Administration Costs (@ 10%)		18,095		15,595		13,324		18,095
Total Annual Costs		$199,041		$171,541		$146,561		$199,041
Total Oversight Cost	**$2,662,776**							

Table F-5. Detailed Costs for ~~Monitoring and~~ Technical Oversight of Experimental Kelp Reef

	Planning & Construction		Monitoring	
Duration (Years)	**1**		**10**	
	PY	**Annual**	**PY**	**Annual**
Salaries				
Ecologist	1.00	67,464	0.80	53,971
Administrative Analyst	0.10	6,293	0.10	6,293
Clerical	0.25	7,431	0.25	7,431
Benefits @ 26.8%				
Ecologist		18,080		14,464
Administrative Analyst		1,686		1,686
Clerical		1,992		1,992
Operating Expenses & Equip. ($28,000/Ecologist PY/Yr)		28,000		22,400
Scientific Advice (Panel, Reviewers)		50,000		30,000
Fund Administration Costs (@ 10%)		18,095		13,824
Total Annual Costs		$199,041		$152,061
Total Oversight Cost	**$1,719,651**			

Table F-6. Detailed Costs for ~~Monitoring and~~ Technical Oversight of Mitigation Kelp Reef

	Planning & Construction		Monitoring (Years 1–7)		Monitoring (Years 8–10)	
Duration (Years	**2.5**		**7.0**		**3.0**	
	PY	**Annual**	**PY**	**Annual**	**PY**	**Annual**
Salaries						
Ecologist	1.00	67,464	0.80	53,971	1.00	67,464
Administrative Analyst	0.10	6,293	0.10	6,293	0.10	6,293
Clerical	0.25	7,431	0.25	7,431	0.25	7,431
Benefits @ 26.8%						
Ecologist		18,080		14,464		18,080
Administrative Analyst		1,686		1,686		1,686
Clerical		1,992		1,992		1,992
Operating Expenses & Equip. ($28,000/Ecologist PY/Yr)		28,000		22,400		28,000
Scientific Advice (Panel, Reviewers)		50,000		25,000		50,000
Fund Administration Costs (@ 10%)		18,095		13,324		18,095
Total Annual Costs		$199,041		$146,561		$199,041
Total Oversight Cost	**$2,120,653**					

Summary of SONGS Mitigation Costs

In addition to the costs for the mitigation requirements of Conditions A, C and D included in the funding option, the Commission added a new requirement that the permittee pay $3.6 million toward the mariculture/fish hatchery program operated by the State of California through the Ocean Resource Enhancement and Hatchery Program (OREHP) as described in Condition C, Section 3.0. The following table summarizes all costs of the SONGS mitigation requirements.

Table F-7. Summary of SONGS Mitigation Costs (in millions)

Wetland Restoration Implementation and Remediation (Condition A)	55.63
Kelp Reef Mitigation Implementation and Remediation (Condition C)	43.84
Independent Monitoring (Condition D)	8.08
Technical Oversight (Condition D)	6.50
Subtotal (Funding Option)	**$114.05**
OREHP Mariculture/Fish Hatchery Program (Condition C)	3.60
GRAND TOTAL	**$117.65**

Appendix G
SUPPLEMENTAL ANALYSES

THE FISH LOSSES AT SONGS IN PERSPECTIVE

The staff has received many questions from Commissioners and the public regarding fish losses at SONGS. Below we summarize the fish losses caused by SONGS Units 2 & 3 and put these losses into perspective with other sources of fish mortality.

1. Fish losses at SONGS

Approximately one square mile of ocean 12 foot deep passes through SONGS' cooling system each day. This water contains millions of fish eggs, larvae, juveniles and adults. Although many larger fish either avoid the intakes or bypass the power plant unharmed (via a fish return system), small fish as well as eggs, larvae, and juveniles are killed by the power plant (by being "entrained" in the cooling water and passed through the plant) (Table 1). (Note that larger fish are also killed by being "impinged" on the screens that prevent large objects from entering the condensers.)

Table 1. Annual fish losses due to SONGS. Range is due to different assumptions used to calculate the losses, the low estimate assuming only 75% circulating water and source is midwater and the high estimate assuming 100% circulating water and source is entire water column.

Eggs[1]	Larvae[2]	Juveniles & Adults[3]	TOTAL
9,176 million to 18,351 million	4,262 million to 6,194 million	1.27 million	13,439 million to 24,546 million

[1] Marine Ecological Consultants, Final report on SONGS monitoring studies of ichthyplankton and zooplankton, October 1987
[2] Marine Review Committee, Interim Technical Report 5, March 1988
[3] Marine Review Committee, Technical Report C, July 1989

The Marine Review Committee (MRC) calculated how many adult fish the eggs, larvae and juveniles killed by SONGS would have produced if they had not been killed, and expressed it as the number of tons of "adult equivalent" fish (Table 2). The MRC also expressed these losses in terms of the expected reduction in the stock of adult fish in Southern California (Table 3).

Table 2. Fish biomass (weight) lost at SONGS as estimated by the MRC[4]. The MRC excluded northern anchovy because it considered this loss to be insignificant since it amounted to <0.1% of the northern anchovy population in Southern California. One metric ton is approximately 2,200 lb.

Species	Biomass Lost (metric tons)
Queenfish & white croaker	500
All other species (18 spp)[5]	100
TOTAL OF ABOVE	600
Northern anchovy	1,340

[4] From Table D-3, MRC Final Report (1989). Only the "best estimate" is presented. This estimate considers that there may be some biomass compensation, later larval stages may be able to avoid entrainment, and all fish larvae may not be killed after being entrained.
[5] Excluding northern anchovy.

Much of the impact is on two species, white croaker and queenfish (500 metric tons). The impacts on these two species are ecologically significant because they result in a substantial reduction (6% to 13%) in their abundances in Southern California. These species are nearshore fish that are considered an "important constituent of commercial and sport fisheries in California" (Leet et al. 1992). Moreover, white croaker and queenfish are important food for larger predators and therefore help support an important food chain.

2. Fish losses at SONGS in perspective

The permittee has tried to equate the fish loss caused by SONGS to the annual catch of two bait boats. However, fish losses at SONGS are not comparable to the catch of bait boats because they take different species — SONGS impacts mostly white croaker and queenfish whereas bait boats take almost exclusively northern anchovies and sardines, which live farther offshore and are *much* more abundant. In fact, SONGS-induced losses of northern anchovies, for which the bait boat analogy *is* appropriate, are more than twice as large as the losses of white croaker and queenfish, but no mitigation is required for anchovy losses because SONGS' impact is not judged "substantial" given the size of the anchovy stock.

Table 3. Estimated reduction in adult standing stock in the Southern California Bight as a result of SONGS' operation (for species with >1% loss).[6]

species	percent reduction
queenfish	13.0
giant kelpfish	6.9
white croaker	6.0
kelpfish (unid.)	5.0
California grunion	5.0
black croaker	4.0
California corbina	4.0
jacksmelt	3.0
cheekspot goby	3.0
reef finspot	2.9
arrow goby	2.6
diamond turbot	2.1
shadow goby	2.1
California clingfish	1.4

[6] From Table 10.1, MRC Final Report (1989).

A more appropriate way to put SONGS' fish impacts into perspective is to compare them to the commercial and recreational catches of white croaker and queenfish (Figure 1). Such a comparison reveals that SONGS "landings" are indeed substantial as they amount to almost twice the combined recreational and commercial catch of queenfish and white croaker in southern California. Some 1.5 million people fish recreationally each year in southern California[8], and these species are an important part of the recreational fishery. Because SONGS takes 4.6 times the recreational catch of queenfish and white croaker in southern California, **SONGS' impacts on these fish is equivalent to approximately 7 million additional recreational fishermen**.

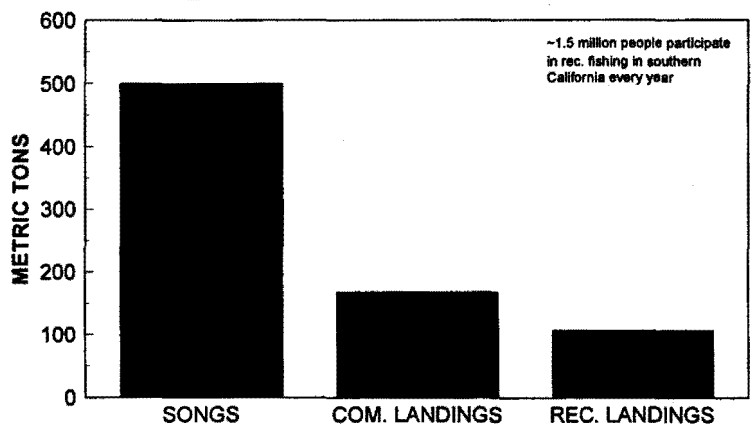


Figure 1. Average annual biomass of white croaker and queenfish caught by commercial[7] and recreational[8] fishermen in southern California compared to the biomass of these species killed by SONGS. A metric ton is 2,205 pounds.

7 southern California commercial landings for 1994 (Rob Collins, CF&G)

8 average of three years (1987,1988,1989) from Witzig et al. (1992) Marine Recreational Fishery Statistics Survey, Pacific Coast, 1987–1989. U.S. Dept. Of Commerce

Another way to put the fish losses at SONGS into perspective is to determine the value the fish would have brought had they been taken to market. White croaker (and queenfish) are sold in fish markets for approximately $1.40 per lb. (e.g., South China Sea Food Center, Los Angeles). Therefore **the 500 metric tons of white croaker and queenfish lost per year could have been sold for approximately $1.5 million per year, or $46 million over the life of SONGS** (estimated to be 30 years). Notice that this value is clearly an underestimate of the total value of fish loss through entrainment at SONGS because it leaves out the 100 metric tons of 'other species' and 1,340 metric tons of northern anchovy (table 2).

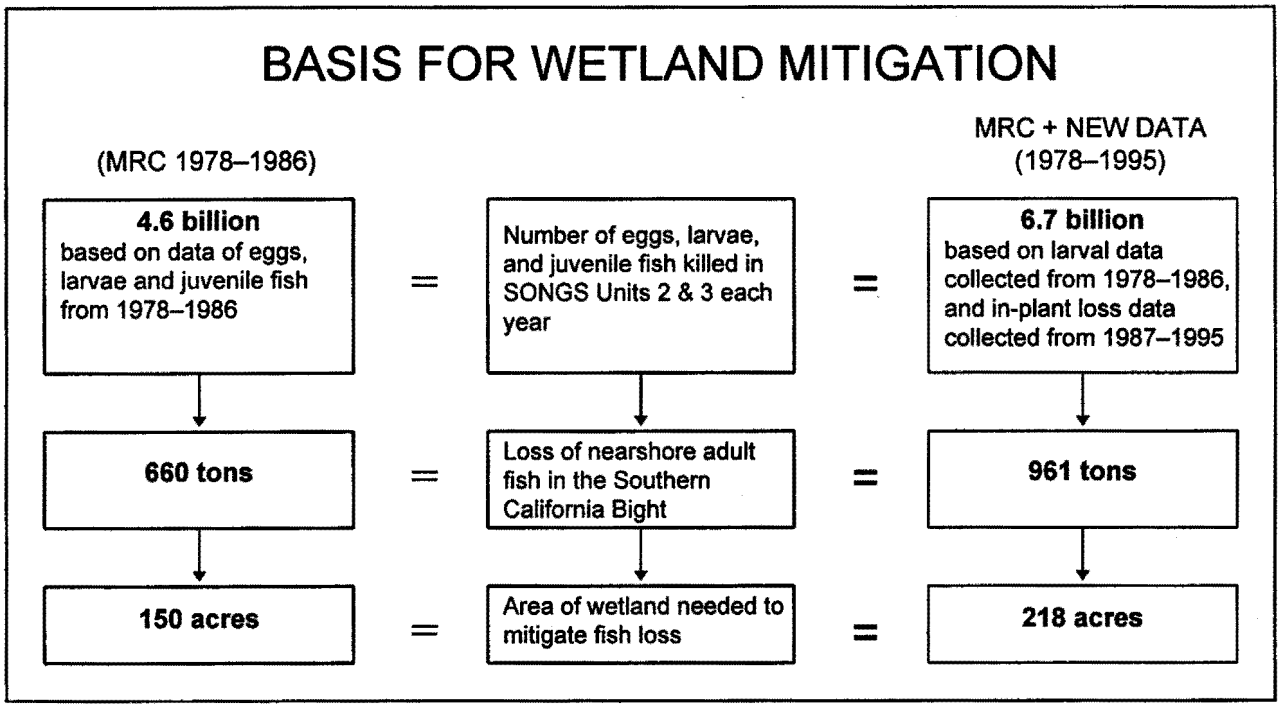
THE RELEVANCE OF NEW DATA ON IN-PLANT FISH LOSSES TO THE WETLAND MITIGATION REQUIREMENT FOR SONGS UNITS 2 AND 3

The October 1996 staff report contains new information on in-plant losses of adult fish that indicate SONGS is killing more fish than previously recorded by the Marine Review Committee. There have been some questions concerning the relevance of these new data to the wetland mitigation requirement for SONGS Units 2 and 3. The explanation below is intended to help clarify this relationship.

The installation and maintenance of behavioral barriers as required by Condition B is mitigation for in-plant losses of adult fish. By contrast, the wetland restoration requirement (Condition A) is mitigation for impacts to local fisheries and losses of nearshore fish in the Southern California Bight due to SONGS killing (via entrainment) of fish eggs, larvae, and juveniles. Because the Bightwide fish losses are so much greater than losses to local fisheries, the size of the wetland restoration project was linked to the quantitative estimates of Bight-wide fish losses. Data on fish eggs, larvae and juveniles were collected near SONGS intakes during the period 1978–1986 by the Marine Review Committee (MRC). For those fish species most affected by the operation of SONGS, the MRC estimated 4.6 billion fish eggs, larvae and juveniles are killed per year, which represents as loss to the standing stock of 660 tons (600 metric tons). (Note: total fish losses were estimated at 3,000 tons and include offshore species such as anchovy). The MRC calculated that the natural resources (i.e., fish, birds, plants and invertebrates) contained within 150 acres of tidally influenced wetland could compensate for the standing stock reductions in those species most affected (see left column of figure below).

The permittee has continued to collect data on in-plant fish losses, and data collected in 1987–1995, after the MRC studies, show that in-plant losses increased 2.7 fold to an average of 25.9 tons / year. As described below, these new data can be used to estimate losses of fish eggs, larvae and juveniles. When this is done, the estimated loss for the entire period 1978–1995 is 6.7 billion fish eggs, larvae, and juveniles. Applying the same method used by the MRC gives an estimated adult fish loss of 961 tons, which would require 218 acres of wetland for full mitigation (see right column of figure below).

Note that Southern California Edison has dismissed the relevance of these new data by stating that the higher in-plant fish losses are within the range of in-plant losses estimated by the MRC, and thus implying that they have already been accounted for in the mitigation requirements. Edison's argument is relevant to Condition B (Behavioral Barriers) which mitigates for in-plant losses of adult fish; the staff has not recommended changes to this condition. SCE's argument is not relevant to Condition A (Wetland Mitigation), which is designed to compensate for the loss of adult fish in the Southern California Bight. The Bight-wide loss of fish was based on entrainment losses of fish eggs, larvae and juveniles; as described above, the new information on in-plant losses is used simply to indicate that the loss of fish eggs, larvae and juveniles is likely to be much larger now than it was during the time the MRC measured it. The mitigation requirement for Bight-wide fish losses never considered the possibility that entrainment losses would increase. Thus, the current mitigation requirement for 150 acres of wetland was based on data taken when entrainment losses were lower than the long term average.



Details of analysis

During the MRC period (1983–1986) in-plant losses averaged 9.5 tons / year. Data collected in 1987–1995, after the MRC studies, show that in-plant losses increased 2.7 fold to an average of 25.9 tons / year.

In-plant losses of adults comprise only a small fraction of the fish losses. The vast majority of fish losses are based on the entrainment of fish eggs, larvae and juveniles, and these data don't exist for the period 1987–1995. However, they can be estimated from in-plant losses by assuming that an increase in the abundance of adult fish in the vicinity of SONGS (as estimated by the in-plant loss of adult fish) results in an increase in the abundance of eggs, larvae, and juvenile fish entrained by SONGS Units 2 & 3. The available data indicate that this assumption is true: there is a significant positive relationship between in-plant losses of Units 2 & 3 and nearshore abundance of fish eggs, larvae, and juveniles during 1983–1986 (the only period for which there are data on both variables). This positive relationship means that an increase in the in-plant loss of adult fish translates into an increase in the loss of fish eggs, larvae, and juveniles.

Using this new information, the MRC's procedures can be used to calculate new estimates of fish loss. The estimated loss of eggs, larvae and juveniles based on in-plant losses of adult fish during the period 1987–1995 is 8.7 billion per year. When averaged with the MRC's estimate of 4.6 billion eggs, larvae, and juveniles killed per year from 1978–1986, the estimated loss for 1978–1995 is 6.7 billion fish eggs, larvae, and juveniles. Applying the same method used by the MRC gives an estimated adult fish loss of 961 tons, which would require 218 acres of wetland for full mitigation.

DOES THE WHITE SEABASS HATCHERY MITIGATE FISH LOSSES CAUSED BY SONGS?

In 1992 the Commission required the SONGS owners to contribute $1.2 million towards the construction of a white seabass hatchery in Carlsbad, California by adding Condition F to the SONGS permit. The hatchery was built and became operational more than a year ago.

A model developed for the white seabass hatchery predicts that after eight years of full capacity operation, the hatchery could potentially augment the biomass of white seabass by 880 tons (800 metric tons) per year. Based on these projections the permittee testified that they believe the Carlsbad hatchery alone fully mitigates the fish losses caused by SONGS' operation.

The hatchery is still in an early phase of operation and it is not clear whether the theoretical estimate of 880 tons will ever be achieved. In addition, it must be remembered that there is the potential for the hatchery to have negative effects on the wild stock of white seabass through negative genetic effects and increased fishing pressure on the wild stock.

More importantly, an analysis of the cost of the hatchery operation shows that the permittee has funded only a small percentage of the total cost. The total cost of constructing and operating the white seabass hatchery program for the full operational life of SONGS (estimated at 30 years) is approximately $42 million (Table 1). The permittee's contribution of $1.2 million amounts to only 2.8% of the total cost; the remaining will come from other sources, including fees collected with sportfishing licenses in Southern California.

Table 1. Summary of costs for construction and operation of the white seabass hatchery. Details for these costs are given in Table 2.

	Permittee's Contributions	Total cost
One-time construction costs	$1,200,000	$2,550,000
Annual operating costs ($1,264,245/yr. X 30 yrs.) + ($195,500/yr. X 10 yrs.)	0	39,882,350
TOTAL ESTIMATED COSTS	**$1,200,000**	**$42,432,350**
Permittee's contribution as % of total cost	**2.8%**	

In conclusion, if the hatchery was to meet its full potential of 880 tons per year, the permittee's share of the hatchery program would comprise only 25 tons of fish per year (2.8% of 880 tons). This is only 4% of the 600 ton loss of nearshore fish caused by the operation of SONGS. Therefore the permittee's contribution to the hatchery program is mitigating for only a small percentage (4%) of the fish losses caused by SONGS.

Table 2. Detailed estimates of costs for construction and operation of the white seabass hatchery

	Permittee's Contributions	Total cost
ONE-TIME CONSTRUCTION COSTS		
Carlsbad hatchery	$1,200,000	$2,300,000
Grow-out pens (average cost = $25,000 X 10 existing pens)	0	250,000
TOTAL One-time construction costs	**$1,200,000**	**$2,550,000**
ANNUAL OPERATING COSTS		
First 10 years:		
Nearshore sampling & genetics studies	$0	$170,000
Dept. of Fish & Game contract admin. charge (15% of $170,000)	0	25,500
Every year:		
Hatchery operations (average of 95/96 & 96/97 costs)	0	835,845
Dept. of Fish & Game personnel	0	300,000
Miscellaneous studies & tasks (e.g., tagging, tag recovery, pen studies)	0	75,000
Grow-out pen rearing Coordinator	0	53,400
TOTAL Annual operating costs (during first 10 years)	**$0**	**$1,459,745**